ALCOHOL CONSUMPTION DURING AND AFTER THE ATLANTIC GROUNDFISH STRATEGY IN A NEWFOUNDLAND AND LABRADOR COMMUNITY AFFECTED BY THE COD MORATORIUM

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by

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Abstract

During the early 1990s, the collapse of the northern cod stocks resulted in the mass unemployment and loss of income of tens of thousands of Newfoundlanders and Labradoreans. During the early years of the moratorium, individuals who were directly impacted by the collapse of the fishery were receiving income support through The Atlantic Groundfish Strategy (TAGS). The TAGS program ended in 1998, while the moratorium on the northern cod stocks continued.

The continuation of the moratorium and the discontinuation of the TAGS program means that individuals who have been highly impacted by the cod moratorium may be more financially strained, and subsequently may be more stressed now than they were during the time when TAGS was in place. The misuse of alcohol has been linked with low income and stress, among other factors, and has been shown to have negative health consequences. The purpose of this study was to assess how the consumption of alcohol among drinkers and among specific groups of high-risk drinkers changed from the time when TAGS was in place to the time after the TAGS program had ended. The study included a random sample of 1352 persons in the Bonavista Headland area of Newfoundland and Labrador, of which 800 were drinkers.

The study found that alcohol consumption among drinkers had decreased from the time when TAGS was in place to the time after TAGS was discontinued. Further, alcohol consumption had decreased among drinkers of low-income households, males and unemployed drinkers. Alcohol consumption had not changed among low-income

individual drinkers, drinkers who were single, and drinkers who perceived themselves as stressed.

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Chapter 1

Introduction

When John Cabot landed in Newfoundland waters in 1497, he said that the waters of the Grand Banks were "swarming with fish," and called the area *terra dos baccalaos,* Portuguese for "land of cod." Despite the harsh physical environment with its rugged, unsheltered coastlines, Cabot and his people remained in Newfoundland because of the riches represented by the multitude of codfish. For more than four centuries, cod fishing symbolized not only the main source of livelihood for rural Newfoundlanders and Labradoreans, but also a way of life. Despite the unsympathetic, unpredictable weather, the isolation and the ruggedness of the land, rural Newfoundlanders and Labradoreans relied heavily on the ocean and its wealth of resources for survival and were only too glad to do so.

After more than a four hundred year history of fishing cod, life in rural Newfoundland and Labrador changed. On July 2, 1992, Mr. John C. Crosbie, the federal Minister of Fisheries and Oceans, announced a moratorium on the northern cod stocks. At that time, cod stocks were determined to be at dangerously low levels for several reasons, including foreign and Canadian overfishing, coldwater temperature changes and predation by seals. The original moratorium was to last until spring of 1994, but was extended indefinitely in 1993. Since the announcement of the cod moratorium, there has been no evidence that the northern cod stocks are recovering, implying that

Newfoundlanders and Labradoreans who depended on those fish stocks for survival will not be back to work in the fishery in the near future (Government of Newfoundland and Labrador, 2006).

The moratorium of the 1990s left over 30,000 Newfoundlanders and Labradoreans without work and/or with a significant decrease in income, representing the largest single layoff in Canadian history. The earnings crisis became the backdrop for the implementation of income replacement measures. The Canadian government established income support programs, such as The Atlantic Groundfish Strategy (TAGS), to deal with the immediate needs of people whose means of employment and income had been severely limited or severed altogether. TAGS was implemented in Newfoundland and Labrador in 1994 and ended in August of 1998 (Government of Newfoundland and Labrador, 2006).

Statement of the Problem

According to the Federal, Provincial and Territorial Advisory Committee on Population Health (1999), people with higher incomes generally live longer, healthier lives than people with lower incomes. Generally, high income Canadians are healthier than middle income Canadians, who are in turn healthier than low income Canadians. This relationship persists regardless of gender, culture or race, even though the causes of illness and death may vary. According to the Federal, Provincial and Territorial Advisory Committee on Population Health, in 1995 the province of Newfoundland and Labrador had the highest percentage of low-income earners in Canada with 21% of

families spending more than 54.7% of their gross incomes on essentials such as food, shelter and clothing. During that time, Newfoundlanders and Labradoreans who were affected by the cod moratorium of the 1990s were receiving income support through TAGS. With the discontinuation of TAGS and the continuation of the cod moratorium, Newfoundlanders and Labradoreans who have been affected by the moratorium are potentially more financially strained now than they were in 1995. Because income and health are directly related, the loss of income experienced by many Newfoundlanders and Labradoreans may place their health in jeopardy.

One of the harmful health consequences that may be linked with low income is increased alcohol consumption. It is well documented that the consumption of alcohol contributes to many adverse health outcomes including accidental death and injury, hypertension, cerebral vascular accidents, liver and pancreatic damage and cancers of the gastrointestinal system ("Is moderate drinking," 1995). Because of the detrimental effects of excessive alcohol use, researchers have tried to identify the reasons for its consumption. Many studies have found that income and alcohol consumption are positively related (Andrews & Layne, 1985; Brenner, 1975; Casswell, Pledger & Hooper, 2003; Dee, 2001; Ettner, 1996; Goodwin et al., 1987; Iverson & Klausen, 1986; Lindquist, Cockerham & Hwang, 1999; Lynch, Kaplan & Salonen, 1997; Petry, 2000; Ruhm, 1995; Ruhm & Black, 2002; Skog, 1986), while other studies have found that income and alcohol consumption are inversely related (Alem, Kebede & Kullgren, 1999; Brenner, 1975; Gili et al., 1989; Harrison & Gardiner, 1999; Hunter, Hannon & Marchi, 1982; Moreira et al., 1996). Still, other studies have found that economic variables are

not a major determinant of alcohol consumption, but that consumption is more greatly influenced by social factors such as age, gender and marital status (Treno, Parker & Holder, 1993).

Newfoundlanders and Labradoreans who were receiving income support through programs such as TAGS during the early years of the cod moratorium are no longer receiving that income support. This means that unless individuals have found other sources of income, their income may be lower now than during the time when TAGS was in place. If this is the case, it can also be theorized that these individuals may be experiencing higher levels of stress related to their income level. Stress has been positively linked with alcohol consumption (Abbey, Smith & Scott, 1993; Carney, Armeli, Tennen, Affleck & O'Neil, 2000; Dee, 2001; Suter, Maire, Holtz & Vetter, 1997). Accordingly, alcohol consumption may have changed since the withdrawal of TAGS in response to changes in both income and associated stress, among other demographic factors. The present study seeks to determine how alcohol consumption in an area of Newfoundland and Labrador that has been highly impacted by the cod moratorium of the 1990s has changed since the withdrawal of income support measures such as TAGS.

Significance of the Problem

The consumption of alcohol can lead to many negative health, economic and social consequences. In 2002, a net total of 4258 Canadians died as a direct result of alcohol, accounting for 1.9% of all Canadian deaths in that year (Rehm et al., 2006). The

net total deaths were calculated by subtracting the number of Canadian deaths thought to be prevented by the consumption of alcohol from the number of deaths thought to be caused by alcohol. Cirrhosis was the leading cause of death, having been the cause of 1246 deaths, followed by motor vehicle accidents which accounted for 909 deaths. Alcohol attributed suicides accounted for 603 deaths of Canadians in 2002. Statistics Canada (2000) reported that between 1979 and 1998, 39% of all spousal homicides in Canada reportedly involved alcohol and/or some other drug. During 2002, alcohol attributed deaths resulted in 191,136 potential years of life lost. This represents 44.9 years of life lost for each individual death, indicating the relatively young age of individuals who died because of alcohol consumption. Also during 2002, illness caused by alcohol consumption accounted for 1,587,054 acute care hospital days.

In 2003-2004, 79.3% of Canadians aged 15 years or older self-reported that they had consumed alcohol some time within the previous year (Adlaf, Begin & Sawka, 2005). Approximately 16% of Canadian drinkers reported that their usual alcohol consumption pattern was to consume more than five drinks per drinking occasion. This pattern of alcohol consumption is commonly referred to as binge drinking. Although Newfoundlanders and Labradoreans in general report consuming less alcohol than Canadians at large, residents of Newfoundland and Labrador reported the highest provincial rate of binge drinking, with just over 30% of residents reporting this dangerous pattern of alcohol consumption (Adlaf et al.). This translates into 30 Newfoundlanders and Labradoreans out of every 100 that are at risk of self-injury, hospitalization or even death related to their own binge drinking, compared with 16 out of every 100 Canadians.

This of course does not take into consideration the innocent people that are at risk of harm should these drinkers choose to engage in activities such as operating a motorized vehicle while impaired.

There are economic burdens placed on Canadian society in addition to the health-related consequences of alcohol consumption. Substance abuse, including alcohol, tobacco and illicit drug use cost approximately $39.8 billion to the Canadian economy in 2002. Alcohol accounted for nearly $14.6 billion in costs of substance abuse, or $463 per capita. This represents 36.6% of the total costs of substance abuse. The largest economic costs of alcohol were $7.1 billion due to lost productivity due to illness and premature death, $3.3 billion for health care costs, and $3.1 billion in law enforcement (Rehm et al., 2006). The estimated cost of substance abuse in Canada in 2002 reported by Rehm and colleagues does not include costs to individuals to purchase the substances. Also not included are welfare benefits paid to individuals who are disabled because of their substance abuse problem. The effects of lost productivity due to incarceration because of a substance abuse problem are also not included in the reported costs.

In addition to health-related and economic consequences, the consumption of alcohol also places strain on the criminal justice system in Canada. In 1993, there were 194,916 liquor act offences and 111,727 adults charged for liquor act offences in Canada. These offences represent 63% of all provincial offences (excluding traffic offences). In 1996, there were more than 95,000 federal drinking and driving offences (Canadian Centre on Substance Abuse, 1999).

Purpose and Research Questions

The purpose of this study is to assess how the consumption of alcohol has changed among drinkers since the withdrawal of TAGS in a Newfoundland and Labrador community that has been affected by the cod moratorium. The study compares data collected during two time periods. The first set of data was collected during the initial years of the cod moratorium when individuals affected by the moratorium were receiving income support through TAGS. The second set of data was collected several years later, after the TAGS program had been completed.

This study seeks to answer the following research questions:

1. Has alcohol consumption among drinkers changed from the time when TAGS was in place to after TAGS was withdrawn?
2. Has alcohol consumption changed from the time when TAGS was in place to after TAGS was withdrawn among the following high-risk groups of drinkers:
    a. Low income earners?
    b. Males?
    c. Single persons?
    d. Unemployed persons?
    e. Self-perceived stressed persons?

In looking at how alcohol consumption has changed in the study area, particular attention will be paid to alcohol consumption among groups of individuals who are known to be at high risk for engaging in harmful alcohol consumption patterns.

Rationale for the Study

The present study overcomes some of the limitations found in other alcohol consumption research. There is inconsistency within previous research relating to the measurement of alcohol consumption. This study measures alcohol consumption as both frequency and quantity of consumption, giving a more accurate picture of an individual's alcohol consumption pattern. Also, the study assesses the alcohol consumption of individuals, as opposed to using aggregate-level data, meaning that one is able to directly link alcohol consumption and other factors known to influence alcohol consumption on an individual level.

From what is already known about the influence of stress on the consumption of alcohol, it is possible that with the withdrawal of TAGS and the continuation of the cod moratorium, the consumption of alcohol in communities affected by the moratorium has potentially increased. That being said, it is also possible that stress levels may have been higher during the initial years of the cod moratorium and individuals in the study area may have adjusted over time to the collapse of the fishery. In this case, it is possible that alcohol consumption may have decreased among participants.

Community health nurses work with individuals, families and communities for the purpose of improving the health of the people they serve. An understanding of how the consumption of alcohol has changed since the withdrawal of TAGS in a Newfoundland and Labrador community will enable nurses to provide residents of that community with care that is specific to the needs identified. To date, no study has been published that has examined the change in alcohol consumption patterns that has

occurred among drinkers in rural Newfoundland and Labrador communities since the withdrawal of TAGS.

Findings from this study may be useful at primary and secondary levels of prevention. Evidence-based, proactive education programs that are based on the identified needs of the community may be developed and implemented in rural Newfoundland and Labrador for the purpose of preventing premature death, illness and mental health problems related to the consumption of alcohol. The findings may assist community health nurses in the early identification of individuals who are believed to be at risk for experiencing the negative consequences of alcohol consumption by identifying factors or characteristics that are more likely associated with higher levels of alcohol consumption.

Definitions of Terms

The literature regarding alcohol consumption is inconsistent in terms of the definitions used to describe and the measures used to calculate the consumption of alcohol. For the purpose of this research, the following definitions are used:

Alcohol Consumption Pattern: A description of alcohol consumption in terms of (a) the average frequency of alcohol consumption (how often alcohol was consumed in the previous year), and (b) the overall number of drinks consumed per week.

Drinker: Participant who has consumed at least one alcoholic drink within the year prior to the study.

Non-drinker: Participant who has not consumed any alcohol within the year prior to the study.

Drink: One bottle of regular beer or glass of draft beer; one glass of wine or sherry; one shot or mixed drink with hard liquor (Centre for Addiction and Mental Health, 2003).

Low Income Cut-off: An income threshold below which a family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would (Statistics Canada, 1999).

Binge Drinking: Consuming five or more drinks on one drinking occasion (Federal, Provincial & Territorial Advisory Committee on Population Health, 1999).

At-risk Drinking: Consuming more than nine standard drinks a week for females and consuming more than fourteen drinks a week for males (Centre for Addiction & Mental Health, 2003).

Drinking in Moderation: Consuming no more than one drink per day for women and no more than two drinks per day for men (Dufour, 1999).

Employed: Participants who are active in the labour force (whether full-time or part-time).

Unemployed: Participants who are not presently active in the work force and classify themselves as presently seeking employment.

Duration of unemployment: The total number of weeks without a job and looking for work.

Non-partnered: Participants who are divorced, separated, widowed or have never been married.

Single: Participants who have never been married.

Chapter 2

Literature Review

A review of the research regarding alcohol consumption reveals that the consumption of alcohol is influenced by a number of factors. In fact, so many factors have been identified that influence the consumption of alcohol that it is difficult to determine individuals who are at high risk of engaging in harmful alcohol consumption patterns. In some cases, such as with income and employment status, there is conflicting evidence as to whether a particular factor is positively or negatively associated with the consumption of alcohol. The purpose of this chapter is to provide a summary of current research relating to alcohol consumption and relevant individual characteristics, including income, age, gender, marital status, education level, employment status, perceived stress and religion, that have been known to influence the consumption of alcohol. An additional purpose of this chapter is to provide a review of major theories of alcohol consumption for the purpose of explaining how alcohol consumption may change within the context of economic/social change. Finally, the findings of the literature are summarized into a theoretical framework. While this chapter provides a broad perspective on alcohol consumption and the factors that influence the consumption of alcohol, it is not the purpose of this study to test which factors contribute to alcohol consumption in this population. The purpose of the present study is to assess how the consumption of alcohol has changed among drinkers since the withdrawal of TAGS.

Individual Characteristics

Income. Research evaluating the influence of income on alcohol consumption is inconclusive. Many studies have found a positive relationship between income and the consumption of alcohol (Andrews & Layne, 1985; Brenner, 1975; Casswell et al., 2003; Dee, 2001; Ettner, 1996; Goodwin et al., 1987; Iverson & Klausen, 1986; Lindquist et al., 1999; Lynch et al., 1997; Petry, 2000; Ruhm, 1995; Ruhm & Black, 2002; Skog, 1986) meaning that people with higher incomes drink more alcohol than people with lower incomes. Similarly, on an individual level, the more income that a person has, the more alcohol he/she will likely consume.

Giesbrecht and colleagues (1982) conducted a longitudinal study to assess the impact that local changes in socio-economic conditions had on alcohol consumption, through study of the 1978-79 International Nickel Company (INCO) workers' strike in the Sudbury basin of Ontario, Canada. Approximately 11,600 workers, primarily miners, were on strike for eight and a half months. The study found that the overall level of alcohol consumption declined in the Sudbury area during the strike. Level of disposable income was assessed using recall data provided by an immediate post-strike survey. Alcohol consumption data were analyzed across time (before, during and after the strike). Alcohol consumption was measured using total volume of sales from official records provided by the Liquor Control Board of Ontario and the Brewers Warehousing Company Limited. Aggregated official data on consumption were not drinker-specific meaning that alcohol consumption was measured per the entire population of the area and not specifically to individuals affected by the strike. Therefore, one cannot easily

separate the impact of the strike from other secular changes likely to have had bearing on alcohol consumption in the area. Additionally, the use of overall alcohol sales as an alcohol consumption indicator is limiting because it does not include sources of alcohol that individuals were brewing in their own homes at the time of the study. Nor does it consider that people may have purchased alcohol in neighboring communities.

Other studies have found that income and alcohol consumption are inversely related (Alem et al., 1999; Brenner, 1975; Gili et al., 1989; Harrison & Gardiner, 1999; Hunter et al., 1982; Moreira et al., 1996). For example, while Gili and colleagues found a direct positive relationship between income and frequency of alcohol consumption, the highest quantity of alcohol consumption was among the group of people with the lowest income. This suggests that measuring how often an individual consumes alcohol, versus the quantity of alcohol consumed per drinking occasion, may reveal a different alcohol consumption pattern. Gili et al. analyzed the results of the 1987 General Population Survey and described the local patterns of alcohol consumption in the province of Seville, Spain. The questionnaire of the General Population Survey was first used in a WHO-sponsored international survey of community responses to alcohol-related problems in Scotland, Zambia, Mexico and the United States of America. The tool was translated and specially adapted to Spain in 1985. Data from 1001 men and 535 women aged 18 years or over, living in the province of Seville, Spain, were used in the analysis. Data were collected through personal structured interviews, conducted by nine trained psychologists. It is unclear whether findings of this study are generalizable across cultures, as it is known that culture influences alcohol consumption. The present study

measures alcohol consumption as a combination of quantity and frequency so that differences such as those identified by Gili and colleagues can be identified.

Unlike a number of previous studies in which economic variables were found to be major determinants of alcohol consumption, Treno and colleagues (1993) found that economic variables play a minor role in determining the consumption of alcohol. Treno and colleagues analyzed the contribution of social and economic variables to changes in per capita alcohol consumption occurring in the United States between 1950 and 1986 using a multivariate time-series analysis framework. Alcohol consumption was measured as the national total sales of all alcohol per capita, in gallons of pure ethanol. The population base was used to calculate consumption rates for individuals over 15 years of age. The results of their study indicated that social structural factors such as age structure of the population, marital instability, female labor force participation and daily life routines have greater utility for understanding alcohol consumption patterns than do economic factors. The researchers found that alcohol consumption declined as the age of the population increased. Marital instability was found to be negatively associated with per capita alcohol consumption, contrary to the researchers' prediction. However, the researchers proposed that this finding resulted from an interaction effect of marital instability with income. Female labor force participation was also found to be negatively related to alcohol consumption. In terms of daily life routines, the researchers found that as individuals spent more time outside their home, the consumption of alcohol increased. This was likely due to the increased opportunities for drinking alcohol.

While useful in the demonstration of the impact of confounding variables on the relationship between income and alcohol consumption, the findings of Treno et al.'s (1993) study were limited because the study was population based. Because alcohol consumption was measured as total volume of sales of alcohol and the entire population was used to calculate consumption rates, it was not possible to determine individual alcohol consumption patterns.

Age. Generally, total alcohol consumption in the adult population decreases as age increases. Young adults from 20-24 years of age consume the greatest amounts of alcohol, most frequently. Alcohol use tends to increase during adolescent years, peak at early adulthood and decrease thereafter (Andrews & Layne, 1985; Casswell et al., 2003; Dee, 2001; Gili et al., 1989; Goodwin et al., 1987; Hunter et al., 1982; McKim & Quinlan, 1991; Single, Brewster, MacNeil, Hatcher & Trainor, 1995). In 1991, McKim and Quinlan reported the results of a secondary analysis of alcohol consumption data collected in a 1985 telephone survey of a random sample of all adults over 20 years of age in St. John's, Newfoundland. A total of 3304 interviews were conducted. These researchers found that alcohol consumption decreased with age as a result of changes in the amount of alcohol consumed per occasion rather than the number of drinking occasions. This provides support for the need to further study the frequency and quantity of alcohol consumption as separate indicators of an individual's overall alcohol consumption pattern.

Gender. Throughout the alcohol consumption literature, males consistently consume larger quantities of alcohol, drink alcohol more often, and are at increased risk

of suffering adverse consequences of alcohol consumption than females. Males consume more alcohol than females regardless of age, culture and other confounding variables (Alem et al., 1999; Andrews & Layne, 1985; Dee, 2001; Gili et al., 1989; Goodwin et al., 1987; Hunter et al., 1982; Moreira et al., 1996). According to the National Population Health Survey (NPHS), as cited by the Federal, Provincial and Territorial Advisory Committee on Population Health (1999), 63% of men and 43% of women in Canada drank alcohol at least once per month in 1996-97. The NPHS is a longitudinal survey conducted by Statistics Canada on a random sample of 17,000 Canadian citizens every two years. The survey is designed to provide information on the health status of the population, use of health care services, factors that influence health such as work and lifestyle habits and changes that people experience with age. In the 1996-97 NPHS, women were more likely to be non-drinkers than men. Men were more likely to report consuming five or more drinks on an occasion than women (42% versus 21%).

Marital status. Single people are more likely to be current drinkers than married people (Dee, 2001; Hajema & Knibbe, 1998; Layne & Whitehead, 1985; Single et al., 1995). Single and colleagues summarized the rates and patterns of alcohol use from the 1993 General Social Survey (GSS) conducted by Statistics Canada. The GSS is a telephone survey with a target population that includes all Canadians 15 years of age and older, excluding residents of the territories and full-time residents of institutions. The 1993 GSS was conducted with a randomly selected sample of 10,385 individuals. The researchers stated that single people reported the highest consumption of alcohol at five or more drinks per week and were most likely to report binge drinking. Persons who

were separated or divorced also reported a relatively high rate of alcohol consumption at 4.6 drinks per week, but they were less likely to report binge-drinking occasions.

Education. The influence of education on alcohol consumption is varied. Single (1999) explored the role of substance abuse in population health in a document prepared for a workshop on addiction and population health. According to Single, rates of alcohol use consistently increased from 64.5% among those with less than a secondary school education to 78.9% among university graduates. Among drinkers, however, high education is associated with fewer heavy drinking occasions (Casswell et al., 2003; Dee, 2001; Moreira et al., 1996). Single found that 3.6% of university graduates consume five or more drinks at one occasion on a weekly basis, compared with 7.4% of secondary school graduates and 6.6% of those who did not complete secondary school. In summary, increased education is associated with increased drinking frequency, but decreased quantity of alcohol consumed per occasion. McKim and Quinlan's (1991) findings in their survey of adults in St. John's, Newfoundland are parallel.

Employment. Research findings regarding unemployment as a predictor of alcohol consumption have been inconclusive. Many studies have found a positive association between unemployment and alcohol consumption (Catalano, Dooley, Wilson & Hough, 1993; Fleming, Manwell, Barry & Johnson, 1998; Gomberg, Siefert & de la Rosa, 1999; Janlert & Hammarstrom, 1992; Layne & Whitehead, 1985; Power & Estaugh, 1990). Other studies have found a negative association between unemployment and alcohol consumption (Brenner, 1975; Dooley, Catalano & Hough, 1992; Leino-Arjas, Liira, Mutanen, Malmivaara & Matikainen, 1999; Lester, 1996). Yet other research has

found that no significant relationship exists between unemployment and alcohol consumption (Hajema & Knibbe, 1998; Hammer, 1992; Iverson & Klausen, 1986; Lahelma, Kangas & Manderbacka, 1995; Morris et al., 1992). Still, other studies have found varied associations between these phenomena (Crawford, Plant, Kreitman & Latcham, 1987; Dooley & Prause, 1998; Ettner, 1997; Groeneveld, Shain & Simon, 1990; Lee, Crombie, Smith & Tunstall-Pedoe, 1990; Luoto, Poikolainen & Uutela, 1998).

Carter (2001) conducted a secondary analysis of data to investigate whether there were differences in drinking patterns by employment status in a random sample of 564 participants residing in the Bonavista Headland and the Isthmus of Avalon areas of Newfoundland and Labrador upon the closure of the Atlantic cod fishery. Alcohol use was measured using standardized criteria set forth by the National Institute on Alcohol Abuse and Alcoholism. Employed persons were more likely to drink any alcohol compared to their unemployed counterparts (78.5% versus 68.6% respectively; chi-square 6.84, $p = .01$). However, the study found no significant overall difference in alcohol consumption pattern by employment status. Carter's study was somewhat limited in its retrospective, cross-sectional design. Thus, there is a need for a longitudinal design to facilitate further clarification of the relationship between unemployment and alcohol consumption patterns. Another limitation of Carter's study is that it was conducted while participants were receiving income support through TAGS. Now that TAGS has been terminated, it is likely that different findings relating to unemployment, income and alcohol consumption will be revealed.

Perceived stress. Research emphasizing psychological responses to economic downturns predicts that alcohol use will rise during these periods as a form of self-medication for stress, with particularly large growth in abusive drinking and risky behaviours such as drunk driving. However, the findings of research linking perceived stress and alcohol consumption are inconclusive. Some studies have found that the prevalence of binge drinking and drinking frequency increases during periods of stress (Abbey et al., 1993; Carney et al., 2000; Dee, 2001; Suter et al., 1997). The prevalence of binge drinking increases during recessions as a response to the general stress associated with financial downturns. This is in keeping with a psychosocial framework that may be implemented to predict changes in alcohol consumption.

In contrast, other research has shown that alcohol consumption decreases when individuals perceive high levels of stress (Breslin, O'Keefe, Burrell, Ratliff-Crain & Baum, 1995; Ng & Jeffery, 2003; Ruhm & Black, 2002). Ruhm and Black investigated the relationship between macroeconomic conditions and alcohol consumption using individual-level data from the 1987 to 1999 interview years of the Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS, administered by the Centers for Disease Control and Prevention in the United States, is an annual telephone survey of the non-institutionalized adult population designed to produce uniform state-specific data on preventive health practices and risky behaviours, including alcohol use and abuse. The study found that alcohol consumption decreased during times of economic downturn, supporting an economic framework of alcohol consumption. The decrease that occurred during economic downturns was concentrated among heavy consumers of alcohol, with

light drinking actually rising. The results suggested that any stress-induced increases in drinking during bad economic times were more than offset by declines resulting from changes in economic factors such as lower incomes. Because the data were obtained from telephone surveys of residential households, persons without phones or whose home was non-residential (e.g.: military bases, college dormitories or institutions) were excluded. Additionally, no information was provided on youths. The study's findings support the need for a longitudinal study where participants can be followed over time to clarify the relationship between economic changes and drinking patterns.

Religion. It is generally accepted that individuals of Roman Catholic faith consume more alcohol than individuals of Protestant faiths (Engs, 2000). While both Roman Catholicism and Protestantism are Christian denominations, the teachings of the denominations are such that the consumption of alcohol is more accepted by members of the Roman Catholic Church. Religion may act as a deterrent to alcohol consumption by advocating teachings that prohibit its use, as is the case with several Protestant denominations such as Salvation Army and Pentecostal. Despite the teachings of Roman Catholic and Protestant churches, some published studies report that religious denomination is not a strong predictor of alcohol consumption or alcohol-related problems when other religious variables such as devotion and conservativism are studied simultaneously (Francis, 1997; Koenig, George, Meador, Blazer & Ford, 1994).

In 1994, a cross-sectional examination of associations between religious variables and alcohol abuse and dependence among 2969 North Carolina residents aged 18 to 97 who participated in the 1983-1984 National Institute of Mental Health

Epidemiologic Catchment Area survey was conducted (Koenig et al.). Data were collected on several religious factors, including religious denomination. Alcohol abuse and dependence were identified using the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III criteria. The DSM is published by the American Psychological Association and contains diagnostic criteria, descriptions and other information useful in diagnosing mental disorders. The researchers found that lifetime alcohol disorders were more prevalent among members of Pentecostal denominations, which is a Protestant faith. Because the study was cross-sectional in design, it is not possible to determine whether Pentecostal participants had a pre-existing alcohol problem before joining the Pentecostal denomination. It is possible that the Pentecostal faith drew people with alcohol problems in by offering an acceptance of their problem and a place for reform and community support as an alternate coping strategy. The cross-sectional nature of the study lends difficulty in interpreting the study's findings and offers support for studying alcohol consumption in relation to religion using a longitudinal design. The researchers found no relationship between religious affiliation and six-month rates of alcohol disorder. It is possible that study participants were hesitant to report existing alcohol problems in fear of religious repercussions.

Limitations of Current Research

Interpreting research regarding alcohol consumption as a collective is difficult because of a number of methodological differences in published research. Firstly, much of the existing research is population based (Brenner, 1975; Brenner, 1987; Lester, 1996;

Moreira et al., 1996; Morrell, Taylor & Kerr, 1998; Ruhm, 1995; Skog, 1986; Treno et al., 1993). Studies based on population-level data are frequently criticized because they risk the "ecological fallacy" or the inferential error of assuming that the individuals in the community who are drinking alcohol are also those who have experienced a loss in income. It is possible that this is so, but unless data are obtained from individuals in the population it is impossible to determine a direct link between individual alcohol consumption and income. It is difficult to ascertain individual behavior in aggregate-level studies.

A second methodological difficulty relates to the measurement of the consumption of alcohol. For instance, alcohol consumption has been measured as a volume of total sales from official records (Giesbrecht et al., 1982). The consumption of alcohol has also been measured as per annum consumption of pure ethanol (Hammer, 1992; Janlert & Hammarstrom, 1992). In other studies, consumption has been determined as a measure of quantity and frequency of alcohol consumption (McKim & Quinlan, 1991). The inconsistency of alcohol consumption measures lends difficulty to the interpretation of the research as a collective and makes the comparison of varying studies difficult. Since measuring the quantity and frequency of alcohol consumption provides a clearer picture of an individual's overall drinking pattern, this form of measurement is the more robust (Gili et al., 1989).

A third methodological difficulty within current research relates to the design of the studies. Many studies are cross-sectional in design (Alem et al., 1999; Carter, 2001; Crawford et al., 1987; D'Arcy & Siddique, 1985; Ettner, 1996; Lahelma et al., 1995;

Layne & Whitehead, 1985; Lee et al., 1990; Lindquist et al., 1999; Luoto et al., 1998; Maril & Zavaleta, 1979; Moreira et al., 1996; Petry, 2000; Peirce, Frone, Russell & Cooper, 1994) meaning that care must be taken in interpreting cause and effect relationships. In cross-sectional analysis, whether alcohol consumption is a consequence or a predictor of level of income is unclear.

Finally, the majority of studies use self-report to collect data. This introduces social desirability bias into the research (Polit & Hungler, 1999). Alcohol consumption is highly impacted by social stereotypes. While it is possible that some individuals will over-report their alcohol consumption for social desirability, it is generally accepted that most individuals are likely to under-report alcohol consumption based on sociocultural expectations. Despite the likely under-reporting of alcohol consumption in self-reported data, the under-reporting appears to be consistent over time, such that the research base in its entirety is likely an under-estimate of alcohol consumption.

The present study uses a retrospective comparison of two survey-based cross-sectional studies carried out at different times so that changes in the consumption of alcohol during times of economic/social change may be detected. It is expected that study participants during the two time periods of the study – during and after TAGS – will have different incomes, be this because TAGS income was not available at the time of the second survey and/or because persons remaining in the area at the time of the second survey had found jobs. While it is recognized that a longitudinal, individual level design is needed to obtain a clearer picture of how alcohol consumption changes during times of economic/social change, this design was not possible for the present study, given

that the study is retrospective and involves a secondary analysis of data. Alcohol consumption is measured as both quantity and frequency, bringing to light a more accurate picture of alcohol consumption patterns. In a similar fashion to other studies of alcohol consumption, data are obtained through self-report. As mentioned, the under-reporting of alcohol consumption appears consistent across research, facilitating comparison of this study with other research on that criterion.

Theories of Alcohol Consumption

The review of the literature illustrated that the relationship between alcohol consumption and the many factors that influence consumption is difficult to describe. Because the relationship is so complex and there are so many factors that influence alcohol consumption, no single theory has been able to explain the complex nature of the consumption of alcohol. There are many theories that exist to describe alcohol consumption, only some of which are highlighted here.

In keeping with the finding that income and alcohol consumption are positively related, an economic framework exists to describe the relationship. The economic framework (Hammer, 1992; Lester, 1996; Peirce et al., 1994) proposes that receiving a low income decreases the risk of alcohol consumption because there is less disposable income available to purchase alcohol. Conversely, high-income earners have more disposable income with which to purchase alcohol. It is important to note that a decrease in income may not result in financial strain, meaning that individuals who have decreased incomes may not alter their alcohol consumption pattern in response to decreased

disposable income. This framework may not account for individuals who resort to less expensive sources of alcohol, such as home-brewed products, in times of economic hardship. Additionally, this model does not account for people who, despite economic restraint, continue to use alcohol to cope with stress or for other reasons.

A psychosocial framework exists to describe the theory that income and alcohol consumption are negatively related (Janlert & Hammarstrom, 1992; Peirce et al., 1994; Power & Estaugh, 1990). The psychosocial framework proposes that loss of income increases the risk of harmful alcohol consumption because of the resulting psychological stress, assuming that persons use alcohol as a method of coping. This theory is dependent on whether other coping strategies besides the consumption of alcohol are available to the individual experiencing the loss of income. Likely, not everyone is apt to use alcohol as a method of reducing stress. This model is limited in that it may not account for people who, although greatly stressed, do not use alcohol as a coping mechanism.

As research reveals, there are other factors that contribute to a change in alcohol consumption besides a change in income. One theory that has been used primarily in researching the determinants of alcohol consumption by adolescents and young adults is the theory of planned behavior (Ajzen, 1991). This theory proposes that decisions to engage in risky activities, such as alcohol use, are the result of a rational cost-benefit analysis. The theory purports that the product of the perceived likelihood and desirability of the positive and negative consequences of drinking can predict alcohol use. In addition to accounting for an individual's perceived consequences of alcohol

consumption as determinants of alcohol use, the theory of planned behavior also allows for the inclusion of social influences in affecting an individual's decision to consume alcohol. The theory of planned behavior also includes perceived behavioral control, or self-efficacy, as a determinant of alcohol consumption. Perceived behavioral control refers to an individual's perception of his or her ability to perform a given behavior – in this case consume alcohol. As a general rule, the more favorable the attitude towards drinking alcohol and the greater the perceived control, the more likely the person is to intend to and actually consume alcohol. While the theory of planned behavior has merit in its ability to predict alcohol use among adolescents and young adults (Campo et al., 2003; Kuther, 2002; Kuther & Higgins-D'Alessandro, 2003; Marcoux & Shope, 1997; Wall, Hinson & McKee, 1998), it is unclear whether the theory is applicable in determining alcohol consumption across the span of adulthood. The theory may need adaptation in accordance with developmental theory, such as Erik Erikson's model of psychosocial development. Furthermore, while the theory has proven successful in predicting the initiation of alcohol consumption, it is unclear whether or not the theory proves useful in predicting a change in alcohol consumption by individuals who are already consumers.

Summary

The phenomenon of alcohol consumption is complex because of the multitude of factors that are known to influence the consumption of alcohol. Additionally, there is conflicting evidence regarding the relationship between particular factors, such as income

and employment status, and alcohol consumption with some research supporting a positive association with alcohol consumption and other studies supporting a negative association with alcohol consumption. The influence of so many factors and the relationship between and amongst those factors are reasons that no single theory exists to describe the phenomenon of alcohol consumption.

Conceptual Framework

The review of research and theoretical literature illustrates that changes in alcohol consumption during times of economic/social change are difficult to determine. Because the consumption of alcohol is complex and influenced by a number of factors, no single theory has been able to describe the phenomenon.

The review of the literature is summarized in Figure 1. The framework depicts the change in alcohol consumption from one period in time to another period in time. In this case, from the time when TAGS was in place to after TAGS was withdrawn. The framework acknowledges that many factors, including the passage of time, are likely contributors to the change in alcohol consumption. While the research questions of the present study are not designed to test this model, the study does measure a number of the factors in the model in order to determine whether the consumption of alcohol has changed over time in persons who are known to be at high risk for alcohol consumption.

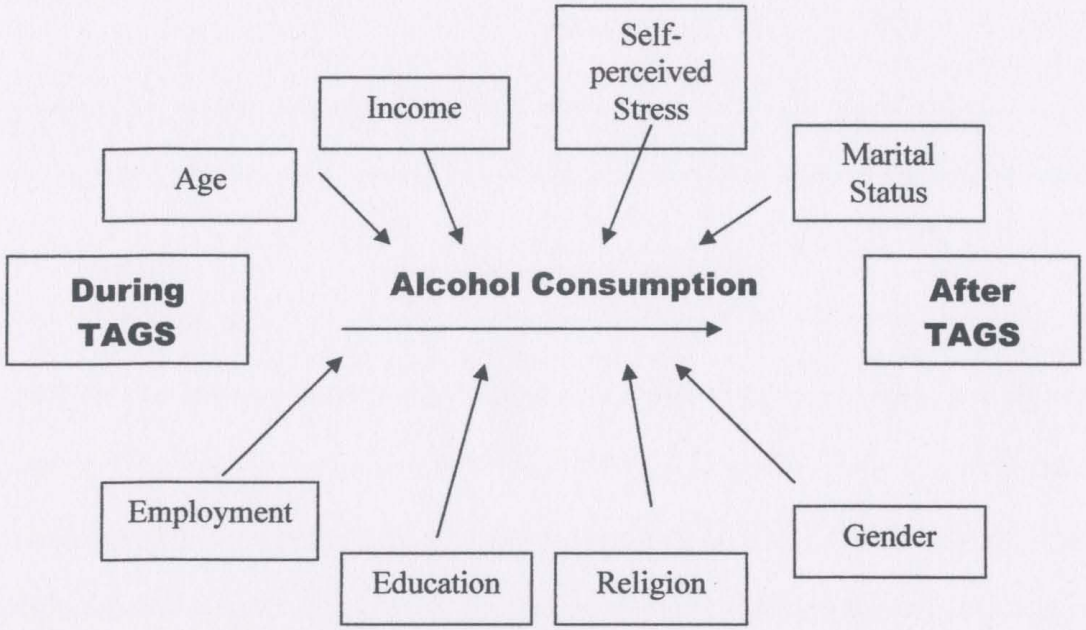

Figure 1. Conceptual Model: Changes in Alcohol Consumption During a Time of Economic/Social Change.

Chapter 3

Methodology

The present study was part of an ongoing three-year funded population health research program entitled *Natural Resources Depletion and Health.* This project's overall purpose was to assess how the health of people in Newfoundland and Labrador and Cape Breton, Nova Scotia, that depended on natural resources have been affected by the depletion and/or change in harvesting of those resources (Gien et al., 2002), resulting in massive unemployment with possible reduction of income. In Newfoundland and Labrador the natural resource was codfish, while in Nova Scotia the natural resource was coal.

This study involved a secondary analysis of data collected during two time periods. The data were collected in the Bonavista Headland of the island portion of Newfoundland and Labrador at both time periods, using different randomly selected samples of the population. The first set of data was collected in 1995-1997, while individuals affected by the cod moratorium were receiving income support through TAGS. The second set of data was collected in 2001-2003, after the TAGS program had been completed.

Design

This study employed a non-experimental, retrospective survey design using a secondary analysis of data gathered during two time periods. The first set of data was

collected as part of the research project entitled *Eco Research – Health Survey.* The second set of data was collected as part of the *Natural Resources Depletion and Health* project.

Population and Sample

The target population for the study was residents of the Bonavista Headland area in Newfoundland. The Bonavista Headland was once one of the largest, oldest and arguably most prosperous inshore fishing regions of the province. People residing in this area were highly dependent on the cod fishery for their livelihood and survival. Consequently, the Bonavista Headland has been one of the regions of Newfoundland and Labrador most highly impacted by the cod moratorium of the 1990s.

The accessible population was restricted to individuals over the age of 16 because this is the legal age for possible employment and thus earning an income. The study included a random sample of 1352 persons, of which 800 were drinkers. During TAGS, 681 participant interviews were conducted, of which 423 participants were self-reported drinkers. After TAGS, 671 participant interviews were conducted, of which 377 participants were self-reported drinkers.

A demographic profile was created for both the entire sample and for drinkers only (excluding non-drinkers). This was done to allow a comparison between these groups. Only drinkers were included in the statistical analyses because the inclusion of non-drinkers would likely alter the study's findings in a manner that would not reflect the changes of alcohol consumption that this study was seeking.

Data Collection

Data for the present study were collected by local interviewers using structured face-to-face interviews. Using local interviewers enhances the quality of data collection because local individuals are aware of the area's issues and concerns, have a better understanding of local language and culture and are perceived as less of a threat than external interviewers. Employing local interviewers for data collection is also seen as a way to encourage local interest in the research project and provide skills, employment and income to the research area (Duffy & Williams, 2003). That being said, employing local interviewers for data collection is not without its risks. Using local interviewers for data collection in smaller communities may introduce bias into the study if participants know the interviewer and are therefore reluctant to provide honest answers to socially stigmatizing questions, such as the amount of alcohol consumed. Local interviewers may also be more inclined to assist study participants to interpret research questions during data collection, introducing bias into the study (Duffy & Williams).

Local interviewers were chosen based on communication skills, experience with interviewing and status as a respected community member (e.g. teacher, fish plant manager). They were educated regarding appropriate interviewing techniques during a one day training session with the research team as a strategy to diminish the amount of bias introduced during data collection.

During both phases, participant households were randomly selected using community residential telephone lists. One of every five residential phone numbers was selected to be interviewed. The household telephone numbers were provided to

community interviewers, who then made contact with each household. Where possible, every adult in the household was interviewed, although this was not always the case. One-on-one interviews were conducted in the homes of individuals that had provided informed consent to participate in the research study. During TAGS 681 participant interviews were conducted; after TAGS 671 interviews were conducted, giving a total sample size of 1352. The sample size was more than ten percent of the total population of the area.

The same data collection tool was used in both time periods, meaning that the information that was collected from participants after TAGS had been withdrawn was the same as the information collected while participants were receiving income support through TAGS. This allowed for a direct comparison of the data from both time periods, thereby strengthening the research design. Relevant portions of the questionnaire that was used in data collection are shown in Appendix A. As aforementioned, participants interviewed during the initial phase of the study are not necessarily the same as those participants interviewed during the second phase of the study.

The questions used in the data collection tool were adopted, with permission, from the 1991 General Social Survey (GSS) of Statistics Canada. The GSS is a continuing program with a single survey cycle each year. The survey's two principal objectives are to gather data on social trends in order to monitor changes in Canadian society over time and to provide information on specific social issues of current or emerging interest. Experts in the field developed the questions in the survey, attesting to the survey's content validity. The tool's validity must be interpreted with caution

because the tool relies on participants' ability to recall items such as income and amount of alcohol consumed during the past week as measures of income and alcohol consumption.

In the GSS the questionnaire was pilot tested by Statistics Canada in September 1991 and involved households that had participated in the 1990 GSS Survey on Family and Friends. The pilot involved 1000 households, 700 in which only tracing procedures were tested and 300 additional in which both tracing and a 1991 GSS questionnaire were administered. No changes were made to the GSS after the pilot study. The survey was then completed by a sample of 11,924 Canadians aged 15 and over living in the 10 provinces of Canada, with the exception of full-time residents of institutions (Statistics Canada, 1994).

Measures

Independent and dependent variables. The independent variable in the study was phase, or year, of the study (i.e., during or after TAGS). This variable was measured on a dichotomous scale. The dependent variable was alcohol consumption. Alcohol consumption was quantified using two measures - frequency of alcohol consumption and quantity of alcohol consumption. Frequency of alcohol consumption was measured using an ordinal scale (see Appendix A). Participants were asked how often on average during the previous year that they had consumed alcohol. Six responses were available to participants: (a) every day, (b) four to six times a week, (c) two to three times per week, (d) once a week, (e) once or twice per month, or (f) less often than once a month.

Quantity of alcohol consumption was measured using a ratio scale (see Appendix A). Participants were asked how many drinks they had consumed on each of the seven days prior to the day of data collection. For data analysis, the amount of alcohol consumed on each of the seven days was totaled to provide an overall weekly amount of alcohol consumed.

Demographic variables. Demographic data were collected on all study participants. Participant age and the duration of unemployment were measured using a ratio scale of measurement. Participant gender, marital status, employment status, education level and religion were measured on a categorical level. Participant and household income and self-perceived stress levels were measured using an ordinal scale.

Income. Participant and household income were measured on an ordinal scale (see Appendix A). Participants were asked two separate questions. The first question was to provide the range of total income for all the members of the household before taxes and deductions for the year prior to data collection. The second question asked participants to provide their own total individual income before taxes and deductions for the year prior to data collection. Nine responses were available to participants: (a) less than 10,000, (b) 10,001 – 20,000, (c) 20,001 – 30,000, (d) 30,001 – 40,000, (e) 40,001-50,000, (f) 50,001 – 60,000, (g) 60,001 – 80,000, (h) 80,001 – 100,000, or (i) above 100,000.

Marital status. Marital status was measured categorically (see Appendix A). Participants were asked to provide their marital status at the time of data collection. Six responses were available to participants: (a) now married and living with spouse, (b)

common-law relationship/live-in partner, (c) divorced, (d) separated, (e) widowed, or (f) never married (single).

Education level. The education of participants was measured categorically (see Appendix A). Participants were asked to provide their highest level of education excluding courses of less than one year. Fifteen responses were available to participants: (a) no schooling, (b) elementary incomplete, (c) elementary complete, (d) junior high incomplete, (e) junior high complete, (f) high school incomplete, (g) high school complete, (h) non-university incomplete, (i) non-university complete, (j) university incomplete, (k) university diploma/certificate, (l) bachelor's degree, (m) professional degree, (n) master's degree, or (o) doctorate.

Employment status. Employment status was also measured categorically (see Appendix A). Participants were asked to provide their employment status at the time of data collection. Nine responses were available to participants: (a) employed full-time, i.e., work 30 hours or more per week; (b) employed part-time; (c) unemployed (looking for a job); (d) retired; (e) keeping house; (f) a student; (g) retraining; (h) on disability; or (i) none of the above. Participants who answered none of the above were asked to specify their employment status.

Self-perceived stress. Self-perceived stress was also measured on an ordinal scale (see Appendix A). Participants were asked how they would describe their life at the time of data collection. Four responses were available to participants: (a) very stressful, (b) somewhat stressful, (c) not very stressful, or (d) not at all stressful.

Religion. Religion was measured categorically (see Appendix A). Participants were asked to provide their religion, if any. Seven responses were available to participants: (a) no religion, (b) Roman Catholic, (c) United Church, (d) Anglican, (e) Salvation Army, (f) Pentecostal, or (g) other. Participants who responded 'other' were provided with space to record their religion.

Data Analysis

All data obtained for this research study were analyzed using the Statistical Package for the Social Sciences (SPSS) software Version 11.0. All statistical tests used a preset alpha level of .05. The differences between phases of the study were considered significant if $p \leq .05$.

Descriptive statistics, including measures of central tendency, standard deviations, frequency counts, percentages and histograms were obtained to generate a descriptive profile of the sample. A descriptive profile was generated for the total sample and for each phase of the study. A descriptive profile was also generated for only drinkers (excluding non-drinkers).

Differences in alcohol consumption during and after TAGS for various subgroups of participants were analyzed using the parametric t-test and non-parametric tests where appropriate. Non-parametric tests, including the Mann Whitney U, Median Test and chi-square were used where the assumptions of parametric testing were violated. When ordinal level data approximated a normal distribution, parametric testing was used (Munro, 2001). Therefore, in those cases t-tests were performed. Data were analyzed

using only those participants who had consumed at least one alcoholic drink within the year prior to data collection.

T-test. The t-test is a robust parametric statistical test that is appropriate for comparing group means. There are three assumptions of the t-test (Munro, 2001). First, the independent variable must be categorical and contain two levels. Second, the distribution of the dependent variable must be normal. Third, the variances of the dependent variable for the two groups must be similar. This is termed homogeneity of variance. To test for homogeneity of variance, the t-test is run. If the significance level of Levene's Test within the t-test exceeds .05, the equal variance results are reported. If the significance level of Levene's Test within the t-test is less than .05, the unequal variance results are reported.

Mann Whitney U. When the assumption of normality of the t-test is violated, the Mann Whitney Test is an appropriate non-parametric alternative. Like the t-test, the Mann Whitney Test is used to compare two groups. There are three assumptions of the Mann Whitney Test (Pett, 1997). First, the independent variable must be dichotomous and the scale of measurement of the dependent variable at least ordinal. Second, the data must consist of a randomly selected sample of independent observations from two independent groups. Third, the population distributions of the dependent variable for the two independent groups must share an unspecified but similar shape. The third assumption is tested using the Kolmogorov-Smirnov (K-S) two-sample goodness-of-fit test. If the significance of K-S is greater than .05, the assumption of similarity of shapes of distributions for the Mann Whitney Test is met. If the significance of the K-S is less

than .05, the assumption of similarity of shapes of distributions of the Mann Whitney Test is violated.

Median test. Should the assumption of similarity of shapes of distributions of the Mann Whitney Test be violated, the Median Test is another non-parametric alternative. Unlike the t-test which compares groups based on the mean, the Median test compares groups based on the median. There are two assumptions of the Median Test (Pett, 1997). First, the independent variable must be at the nominal level of measurement and the dependent variable at least at the ordinal level. Second, the levels of measurement of the independent variable must be independent of one another.

Chi-square. Chi-square is a non-parametric test that is useful when both the independent and dependent variable are measured categorically. Chi-square compares the actual number or frequency in each group with the expected number. There are four assumptions of chi-square (Pett, 1997). First, the data must be frequency data. Second, there must be an adequate sample size in each cell of the contingency table. Expected frequencies of less than five in a 2x2 table are problematic. In tables larger than 2x2, no more than 20% of the cells should have expected counts of less than five. Third, the measures must be independent of one another. Fourth, the variables being examined must be categorical with mutually exclusive levels.

When chi-square is found to be significant, the standardized residuals are helpful in determining which cells in the table are influencing the value of the chi-square. An absolute value of greater than two for a standardized residual implies that the cell in question is a significant contributor to the observed value of the chi-square.

Also, when chi-square is determined to be significant, it is possible to determine the strength of the relationship between the two variables. Cramer's *V* will always range between zero and one. The closer the value of Cramer's *V* is to one, the stronger the relationship between the two variables being examined.

Ethical Considerations

The two original research studies were granted ethical approval by the Human Investigation Committee of Memorial University of Newfoundland. The present study also received ethical approval from the Human Investigation Committee of Memorial University of Newfoundland (see Appendix B). Written, informed consent of participants was sought prior to data collection. Copies of the consent forms used in the initial study *(Eco Research – Health Survey)* and in the most recent study *(Natural Resources Depletion and Health)* are included in Appendixes C and D, respectively. The consent form was read and discussed with participants, allowing time for any questions that participants may have had. Participants were informed of the study's purpose, the expected amount of time necessary to complete data collection and of their ability to withdraw from the study at any time without penalty. Participants were given a copy of the completed consent form. Strict confidentiality of participants was maintained throughout the present study because no participant names were provided to this investigator for analysis. Relevant data were provided to this researcher on a diskette, which was kept in a locked cabinet. The diskette will be returned to its original owner upon completion of this study.

Chapter 4

Findings

This chapter provides a detailed description of the findings generated through the statistical analysis. First, a demographic profile of study participants is provided along with a detailed description of observed demographic changes from the time when TAGS was in place to after TAGS was withdrawn. Second, a demographic profile of only drinkers is provided, again giving a detailed description of observed demographic changes from the time when TAGS was in place to after TAGS was withdrawn. Third, a detailed summary of findings related to the research questions is presented. Findings relating to the study's research questions are presented in the order of the research questions listed in Chapter One.

Demographic Profile

Study participants. The demographic characteristics of study participants are shown in Table 1. Demographic features of participants are shown for the two phases of the study and for the sample as a whole.

Table 1

Demographic Characteristics of Participants According to Phase of the Study

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 681	M (SD)	(%)	N = 671	M (SD)	(%)	N = 1352	M (SD)	(%)
Age**	680	43.3 (17.3)		668	47.2 (17.1)		1348	45.2 (17.3)	
Gender									
Male	327		48.0	294		43.8	621		45.9
Female	354		52.0	377		56.2	731		54.1
Marital Status									
Partnered	462		67.8	487		72.6	949		70.2
Non-partnered	219		32.2	184		27.4	403		29.8
Employment Status**									
Employed	150		22.0	292		43.6	442		32.7
Unemployed	279		41.0	82		12.3	361		26.7
Other	252		37.0	295		44.1	547		40.5
Duration of Unemployment** (in weeks)	251	107.8 (101.2)		68	44.2 (93.2)		319	94.2 (102.8)	
Highest Education Level*									
Elementary or Less	43		6.3	24		3.6	67		5.0
Junior High	123		18.1	99		14.8	222		16.4
High School	353		52.0	374		55.7	727		53.9
Non-University	86		12.7	127		18.9	213		15.8
University	74		10.9	47		7.0	121		9.0

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 681	M (SD)	(%)	N = 671	M (SD)	(%)	N = 1352	M (SD)	(%)
Religion**									
Roman Catholic	152		22.3	72		10.7	224		16.6
United Church	221		32.5	248		37.0	469		34.7
Anglican	201		29.5	160		23.9	361		26.7
Salvation Army	59		8.7	111		16.6	170		12.6
Pentecostal	28		4.1	68		10.1	96		7.1
Other	20		2.9	11		1.6	31		2.3
Household Income									
<$10,000	16		4.1	8		3.2	24		3.8
$10,001 – $20,000	99		25.6	72		28.5	171		26.7
$20,001 – $40,000	185		47.8	117		46.2	302		47.2
$40,001 – $60,000	72		18.6	35		13.8	107		16.7
$60,001 – $80,000	13		3.4	11		4.3	24		3.8
$80,001 – $100,000	2		0.5	10		4.0	12		1.9

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 681	M (SD)	(%)	N = 671	M (SD)	(%)	N = 1352	M (SD)	(%)
Participant Income**									
<$10,000	210		50.4	90		32.5	300		43.2
$10,001 – $20,000	152		36.5	128		46.2	280		40.3
$20,001 – $40,000	48		11.5	40		14.4	88		12.7
$40,001 – $60,000	7		1.7	11		4.0	18		2.6
$60,001 – $80,000	0		0	1		0.4	1		0.1
$80,001 – $100,000	0		0	7		2.5	7		1.0
Self-Perceived Stress**	681	2.6 (.9)		671	2.7 (.8)		1352	2.6 (.8)	

**$p \leq .01$. *$p \leq .05$

The Median Test was used to determine if there was a significant difference in the age of participants by phase of the study. The results of the Median Test indicate that participants after TAGS are significantly older than those during TAGS (Median Test $X^2 = 15.78$, $p = .00$). Participants during TAGS were a mean age of 43.3 years, while participants after TAGS were a mean of 47.2 years of age.

The frequency distribution of the age of participants according to phase of the study is shown in Table 2. During the post-TAGS period, there were fewer participants in the 16 to 39 age range and more in the forty and over age range.

Table 2

Frequency Distribution of Participant Age According to Phase of the Study

Age of Participants	During TAGS N = 680		After TAGS N = 668		Total Sample N = 1348	
	N	%	N	%	N	%
16 – 29	170	25.0	110	16.5	280	20.8
30 – 39	125	18.4	102	15.3	227	16.8
40 – 49	159	23.4	173	25.9	332	24.6
50 – 59	93	13.7	130	19.5	223	16.5
60 – 69	71	10.4	72	10.8	143	10.6
70 – 79	47	6.9	59	8.8	106	7.9
80 – 95	15	2.2	22	3.3	37	2.7

Chi-square was used to assess for differences in gender representation by phase of the study. The results of the chi-square show that there is no significant difference in gender representation in the two time periods ($X^2 = 2.40$, $p = .12$).

The difference in marital status, as with gender representation, was assessed using

chi-square. Data related to marital status were recoded to reflect participants being either partnered or non-partnered. Partnered participants were those participants that were either married or living common law. Non-partnered participants were those participants that were divorced, separated, widowed or never married. The chi-square analysis indicates that there is no significant difference in marital status of participants between the two time periods ($X^2 = 3.63$, p = .06).

Chi–square was used to analyze for differences in employment status among participants. Data were recoded to reflect three categories of employment – employed, unemployed and 'other'. Participants employed full-time and part-time were combined to represent employed participants. The category of 'other' was a combination of participants who were retired, keeping house, were students, retraining, disabled, on Social Services, self-employed and on maternity/sick leave.

The results of the chi-square indicate that there is a significant difference in the employment status of participants when participants are grouped according to phase of the study ($X^2 = 156.4$, df = 2, p = .00). During TAGS, only 22% of the sample was employed, compared with 43.6% of the sample during the post-TAGS period. Similarly, 41.0% of participants during TAGS were unemployed compared with only 12.3% of participants after TAGS. The standardized residuals for the contingency table are shown in Table 3.

Table 3

Standardized Residuals for Chi-Square of Employment Status by Phase of the Study

	Employment Status		
	Employed	Unemployed	Other
During TAGS	- 4.9	7.2	- 1.4
After TAGS	4.9	- 7.2	1.5

The values of the standardized residual for unemployed and employed participants during and after TAGS indicate that these cells are significant in influencing the value of the chi-square. This means that the significant value of the chi square is resulting from a change in employment status of participants between the two time periods. The "other" category is not a significant influence on the value of the chi square.

The value of Cramer's V for the contingency table was .34 ($p = .00$), indicating that the relationship between employment status and phase of the study, though significant, was weak. Similar to the Pearson product-moment correlation, a higher value of Cramer's V would indicate a greater degree of relationship between the two variables (Pett, 1997).

The difference in the duration of unemployment (in weeks) among those participants who classified themselves as unemployed was analyzed using the Median Test. The results of the Median Test indicate that unemployed participants experienced a significantly longer duration of unemployment during TAGS than participants after

TAGS ($X^2 = 39.0$, $p = .00$). The frequency distribution of the duration of unemployment among unemployed participants is shown in Table 4.

Table 4

Frequency Distribution of Duration of Unemployment (in weeks) Among Unemployed Participants According to Phase of the Study

Duration of Unemployment	During TAGS N = 251		After TAGS N = 68		Total Sample N = 319	
	N	%	N	%	N	%
0 – 20	31	12.4	42	61.8	73	22.9
21 – 40	60	23.9	15	22.1	75	23.5
41 – 60	21	8.4	3	4.4	24	7.5
61 – 80	4	1.6	0	0	4	1.3
81 – 104	11	4.4	2	2.9	13	4.1
105 – 1040	124	49.4	6	8.8	130	40.8

There was a considerably higher percentage of unemployed participants unemployed for zero to twenty weeks duration in the post-TAGS period (61.8%) compared with during TAGS (12.4%). There was a considerably lower percentage of unemployed participants unemployed for greater than 105 weeks during the post-TAGS period (8.8%) than during TAGS (49.4%).

The difference between phases in the highest level of education of participants was analyzed using the Mann Whitney Test. The results of the Mann Whitney Test

indicate that participants during phase two of the study had a significantly different level of education than their phase one counterparts ($z = -1.93$, $p = .05$). The frequency distribution of the highest level of education achieved by participants is shown in Table 5.

Table 5

Frequency Distribution of Highest Level of Education of Participants According to Phase of the Study

Highest Level of Education	During TAGS N = 679		After TAGS N = 671		Total Sample N = 1350	
	N	%	N	%	N	%
No schooling	4	.6	1	.2	5	.4
Elementary incomplete	25	3.7	16	2.4	41	3.0
Elementary complete	14	2.1	7	1.0	21	1.6
Junior high school incomplete	54	8.0	45	6.7	99	7.3
Junior high school complete	69	10.2	54	8.0	123	9.1
High school incomplete	200	29.5	204	30.4	404	29.9
High school complete	153	22.5	170	25.3	323	23.9

Highest Level of Education	During TAGS N = 679		After TAGS N = 671		Total Sample N = 1350	
	N	%	N	%	N	%
Non-university incomplete	17	2.5	37	5.5	54	4.0
Non-university complete	69	10.2	90	13.4	159	11.8
University incomplete	31	4.6	17	2.5	48	3.6
University diploma, certificate	12	1.8	10	1.5	22	1.6
University bachelors	25	3.7	17	2.5	42	3.1
University profession	2	.3	0	0	2	.1
University masters	4	.6	3	.4	7	.5

Fewer participants during the post-TAGS period had junior high school or less as their highest achieved level of education compared with during TAGS. A greater percentage of participants had high school or non-university as their highest level of education during the post-TAGS period compared with during TAGS. There were fewer participants with any university education as their highest level of education during the post-TAGS period than during TAGS.

Religious following of participants was analyzed using chi-square. With the original coding of this variable, 12 cells (54.5%) had expected counts less than five. For this reason, the less popular religious faiths were grouped together as 'other.' When the

data were recoded, 'other' represented a combination of no religion, Jehovah's Witness, Gospel Hall, Seventh Day Adventist, non-denominational and other. With the data recoded in this manner, the assumptions of chi-square were met.

The results of the chi-square indicate that there is a significant difference in the religious following of participants when participants are grouped according to phase of the study ($X^2 = 69.9$, df = 5, p = .00). During the post-TAGS period, there were a greater percentage of participants from the United Church, Salvation Army and Pentecostal faiths than during the time when TAGS was in place. Similarly, there were fewer participants of Roman Catholic and Anglican faiths in the post-TAGS period compared with during TAGS. The standardized residuals for the contingency table are shown in Table 6.

Table 6

Standardized Residuals for Chi-Square of Religious Following by Phase of the Study

	Religious Following					
	Roman Catholic	United Church	Anglican	Salvation Army	Pentecostal	Other
During TAGS	3.7	- 1.0	1.4	- 2.9	- 2.9	1.1
After TAGS	- 3.7	1.0	- 1.4	2.9	3.0	- 1.1

The absolute values of the standardized residuals indicate that the religious representation by Roman Catholic, Salvation Army and Pentecostal participants were

important contributors to the value of the chi-square. Cramer's V indicated a weak significant relationship between the two variables (Cramer's $V = .23$, $p = .00$).

The Mann Whitney Test was used to determine whether there was any significant change in household income among study participants from the time when TAGS was in place to after TAGS was withdrawn. Of note is that not all participants reported their income. Overall, only 47.3% of study participants reported their household income. During TAGS, 56.8% of participants reported their household income, while after TAGS only 37.7% of participants reported their household income. The results of the Mann Whitney Test indicate that there is no significant difference in the household income of participants from the time when TAGS was in place to after TAGS was withdrawn ($z = -.08$, $p = .94$).

The Median Test was used to determine whether there was any change in the income of participants from the time when TAGS was in place to after TAGS was withdrawn. Again it is noteworthy that not all participants reported their individual income. Overall, 51.3% of study participants reported their individual income. During TAGS, 61.2% of participants reported their income, while after TAGS only 41.3% of participants reported their income. The results of the Median Test indicate that after TAGS, participants reportedly earned a significantly higher income than their counterparts during TAGS (Median Test $X^2 = 7.98$, $p = .005$). The distribution of participant incomes according to phase of the study is shown in Table 7.

Table 7

Frequency Distribution of Participant Income According to Phase of the Study

Income of Participants	During TAGS N = 417		After TAGS N = 277		Total Sample N = 694	
	N	%	N	%	N	%
< 10,000	210	50.4	90	32.5	300	43.2
10,001 – 20,000	152	36.5	128	46.2	280	40.3
20,001 – 30,000	31	7.4	35	12.6	66	9.5
30,001 – 40,000	17	4.1	5	1.8	22	3.2
40,001 – 50,000	5	1.2	6	2.2	11	1.6
50,001 – 60,000	2	.5	5	1.8	7	1.0
60,001 – 80,000	0	0	1	.4	1	.1
80,001 – 100,000	0	0	7	2.5	7	1.0

During TAGS, more than 50% of participants reportedly earned less than $10,000 before taxes and deductions during the year prior to data collection. During TAGS, no participant reportedly earned greater than $60,000 before taxes and deductions during the year prior to data collection.

While there is a significant difference in participant income according to phase of the study, in order to assess whether there has been any real change in the income of participants from the time when TAGS was in place to after TAGS was withdrawn, the rate of inflation was considered. According to the Bank of Canada (2005), the annual

rate of inflation for the duration of the present study is 1.95%. Because participant income was measured using an interval scale, it is impossible to determine participants' exact income. During TAGS, participants reportedly earned a median income of less than $10,000 per year before deductions. After TAGS, participants reportedly earned a median income of $10,001 – $20,000 per year before deductions. Using an annual inflation rate of 1.95%, $9,999 in 1995 (the first year of data collection during TAGS) is equivalent to $11,671.87 in 2003 (the final year of data collection after TAGS). This is a conservative estimate of the influence of inflation on participant income throughout the study. While it cannot be said with certainty that participants experienced any real change in income between time periods because the above calculated incomes fall within the reported median incomes of participants, it is likely that participant income did increase from the time when TAGS was in place to after TAGS was withdrawn. The frequency distribution of participant income according to phase of the study (see Table 7) also shows that there was an increased percentage of participants within higher income brackets during the post-TAGS period compared with during TAGS.

The Median Test was used to determine whether there was any change in the degree of self-perceived stress among participants from the time when TAGS was in place to after TAGS was discontinued. The results of the analysis indicate that participants reportedly experienced significantly less stress during the post-TAGS period than during TAGS (Median Test $X^2 = 27.6$, $p = .00$). The distribution of the degree of self-perceived stress is shown in Table 8.

Table 8

Frequency Distribution of Self-Perceived Stress of Participants According to Phase of the Study

Degree of Self-Perceived Stress	During TAGS N = 681		After TAGS N = 670		Total Sample N = 1351	
	N	%	N	%	N	%
Very stressful	57	8.4	40	6.0	97	7.2
Somewhat stressful	291	42.7	207	30.8	498	36.8
Not very stressful	202	29.7	362	53.9	564	41.7
Not at all stressful	131	19.2	61	9.1	192	14.2

After TAGS, fewer participants reportedly felt any stress at all compared with during TAGS. Similarly, a greater percentage of participants reportedly felt not very stressed after TAGS compared with during TAGS. Interestingly, more participants (19.2%) reportedly felt not at all stressed during TAGS compared with after TAGS (9.1%).

Drinkers. Overall, 59.2% of study participants were self-reported drinkers. During TAGS, 62.1% of study participants reportedly consumed alcohol at least once in the year prior to data collection. After TAGS, 56.2% of study participants reportedly consumed alcohol at least once in the year prior to data collection. Because the study's analysis included only drinkers and excluded non-drinkers, a demographic profile of drinkers was created and is shown in Table 9.

Table 9

Demographic Characteristics of Drinkers According to Phase of the Study

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 423	M (SD)	(%)	N = 377	M (SD)	(%)	N = 800	M (SD)	(%)
Age**	422	40.2 (15.6)		376	43.7 (15.4)		798	41.8 (15.6)	
Gender									
Male	230		54.4	186		49.3	416		52.0
Female	193		45.6	191		50.7	384		48.0
Marital Status									
Partnered	298		70.4	281		74.5	579		72.4
Non-partnered	125		29.6	96		25.5	221		27.6
Employment Status**									
Employed	114		27.0	188		50.1	302		37.8
Unemployed	189		44.7	53		14.1	242		30.3
Other	120		28.4	134		35.6	254		31.8
Duration of Unemployment** (in weeks)	172	108.6 (110.4)		44	46.2 (103.5)		216	95.9 (111.6)	
Highest Education Level*									
Elementary or Less	22		5.2	3		0.8	25		3.1
Junior High	62		14.7	46		12.2	108		13.5
High School	210		49.8	195		51.7	405		50.7
Non-University	72		17.1	92		24.4	164		20.5
University	56		13.3	41		10.9	97		12.1

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 423	M (SD)	(%)	N = 377	M (SD)	(%)	N = 800	M (SD)	(%)
Religion**									
Roman Catholic	107		25.3	54		14.4	161		20.2
United Church	155		36.6	147		39.1	302		37.8
Anglican	121		28.6	115		30.6	236		29.5
Salvation Army	22		5.2	34		9.0	56		7.0
Pentecostal	11		2.6	21		5.6	32		4.0
Other	7		1.7	5		1.3	12		1.5
Household Income									
<$10,000	9		3.6	6		4.1	15		3.8
$10,001 – $20,000	51		20.6	35		24.1	86		21.9
$20,001 – $40,000	120		48.6	67		46.2	187		47.7
$40,001 – $60,000	56		22.7	22		15.2	78		19.9
$60,001 – $80,000	9		3.6	10		6.9	19		4.8
$80,001 – $100,000	2		0.8	5		3.4	7		1.8

Characteristic	During TAGS			After TAGS			Total Sample		
	N = 423	M (SD)	(%)	N = 377	M (SD)	(%)	N = 800	M (SD)	(%)
Participant Income*									
<$10,000	125		46.5	60		37.0	185		42.9
$10,001 – $20,000	97		36.1	59		36.4	156		36.2
$20,001 – $40,000	41		15.2	28		17.2	69		16.0
$40,001 – $60,000	6		2.3	11		6.8	17		4.0
$60,001 – $80,000	0		0	1		0.6	1		0.2
$80,001 – $100,000	0		0	3		1.9	3		0.7
Self-Perceived Stress**	423	2.4 (.8)		377	2.6 (.8)		800	2.5 (.8)	

**$p \leq .01$. *$p \leq .05$

The Median Test was used to determine if there was a significant difference in the age of drinkers by phase of the study. The results of the Median Test indicate that drinkers after TAGS are significantly older than those during TAGS (Median Test $X^2 = 11.03$, $p = .00$). Drinkers during TAGS were a mean age of 40.2 years, while drinkers after TAGS were a mean of 43.7 years of age.

The frequency distribution of the age of drinkers according to phase of the study is shown in Table 10. During the post-TAGS period, there were fewer drinkers in the 16 to 39 age range and more drinkers in the forty and over age range than during TAGS.

Table 10

Frequency Distribution of Drinkers' Age According to Phase of the Study

Age of Drinkers	During TAGS N = 422		After TAGS N = 376		Total Sample N = 798	
	N	%	N	%	N	%
16 – 29	123	29.1	75	19.9	198	24.8
30 – 39	91	21.6	67	17.8	158	19.8
40 – 49	102	24.2	110	29.3	212	26.6
50 – 59	54	12.8	68	18.1	122	15.3
60 – 69	28	6.6	34	9.0	62	7.8
70 – 79	18	4.3	19	5.1	37	4.6
80 – 95	6	1.4	3	.8	9	1.1

Chi-square was used to assess for differences in gender representation among drinkers by phase of the study. The results of the chi-square show that there is no significant difference in gender representation among drinkers when drinkers are grouped according to phase of the study ($X^2 = 2.03$, $p = .16$).

The difference in marital status of drinkers, as with gender representation,

was assessed using chi-square. Data related to marital status were recoded to reflect drinkers being either partnered or non-partnered. Partnered drinkers were those drinkers that were either married or living common law. Non-partnered drinkers were those drinkers that were divorced, separated, widowed or never married. The results of the chi-square indicate that there is no significant difference in marital status of drinkers when drinkers are grouped according to phase of the study ($X^2 = 1.67$, $p = .20$).

Chi–square was used to analyze for differences in employment status of drinkers between the two time periods. Data were recoded to reflect three categories of employment – employed, unemployed and 'other'. Drinkers employed full-time and part-time were combined to represent employed drinkers. The category of 'other' was a combination of drinkers who were retired, keeping house, were students, retraining, disabled, on Social Services, self-employed and on maternity/sick leave.

The results of the chi-square indicate that there is a significant difference in the employment status of drinkers when drinkers are grouped according to phase of the study ($X^2 = 92.78$, $df = 2$, $p = .00$). During TAGS, only 27% of drinkers were employed, compared with 50.1% of drinkers during the post-TAGS period. Similarly, 44.7% of drinkers during TAGS were unemployed compared with only 14.1% of drinkers after TAGS. The standardized residuals for the contingency table are shown in Table 11.

Table 11

Standardized Residuals for Chi-Square of Employment Status of Drinkers by Phase of the Study

	Employment Status		
	Employed	Unemployed	Other
During TAGS	- 3.6	5.4	- 1.3
After TAGS	3.9	- 5.7	1.3

The absolute values of the standardized residuals for unemployed and employed drinkers during and after TAGS indicate that these cells are significant in influencing the value of the chi-square. The value of Cramer's *V* for the contingency table was .34 (p = .00), indicating that the relationship between employment status of drinkers and phase of the study, though significant, was weak.

The difference in the duration of unemployment (in weeks) among those drinkers who classified themselves as unemployed was analyzed using the Median Test. The results of the Median Test indicate that drinkers reportedly experienced a significantly longer duration of unemployment during TAGS than drinkers after TAGS ($X^2 = 24.35$, p = .00). The frequency distribution of the duration of unemployment among unemployed drinkers is shown in Table 12.

Table 12

Frequency Distribution of Duration of Unemployment (in weeks) Among Unemployed Drinkers According to Phase of the Study

Duration of Unemployment	During TAGS N = 172		After TAGS N = 44		Total Sample N = 216	
	N	%	N	%	N	%
0 – 20	24	14.0	27	61.4	51	23.6
21 – 40	39	22.7	10	22.7	49	22.7
41 – 60	15	8.7	2	4.5	17	7.9
61 – 80	4	2.3	0	0	4	1.9
81 – 104	8	4.7	1	2.3	9	4.2
105 - 1040	82	47.7	4	9.1	86	39.8

There was a considerably higher percentage of unemployed drinkers unemployed for zero to twenty weeks duration in the post-TAGS period (61.4%) compared with during TAGS (14.0%). There was a considerably lower percentage of unemployed drinkers unemployed for greater than 105 weeks during the post-TAGS period (9.1%) than during TAGS (47.7%).

The difference between phases in the highest level of education of drinkers was analyzed using the Mann Whitney Test. The results of the Mann Whitney Test indicate that the education level of drinkers during phase two of the study was different than that of their phase one counterparts ($z = -2.08$, $p = .04$). The frequency distribution of the highest level of education achieved by drinkers is shown in Table 13.

Table 13

Frequency Distribution of Highest Level of Education of Drinkers According to Phase of the Study

Highest Level of Education	During TAGS N = 422		After TAGS N = 377		Total Sample N = 799	
	N	%	N	%	N	%
No schooling	3	.7	0	0	3	.4
Elementary incomplete	13	3.1	2	.5	15	1.9
Elementary complete	6	1.4	1	.3	7	.9
Junior high school incomplete	29	6.9	16	4.2	45	5.6
Junior high school complete	33	7.8	30	8.0	63	7.9
High school incomplete	117	27.7	103	27.3	220	27.5
High school complete	93	22.0	92	24.4	185	23.2
Non-university incomplete	16	3.8	31	8.2	47	5.9
Non-university complete	56	13.3	61	16.2	117	14.6

Highest Level of Education	During TAGS N = 422		After TAGS N = 377		Total Sample N = 799	
	N	%	N	%	N	%
University incomplete	21	5.0	15	4.0	36	4.5
University diploma, certificate	7	1.7	7	1.9	14	1.8
University bachelors	22	5.2	16	4.2	38	4.8
University profession	2	.5	0	0	2	.3
University masters	4	.9	3	.8	7	.9

Fewer drinkers during the post-TAGS period had junior high school or less as their highest achieved level of education compared with during TAGS. A greater percentage of drinkers had high school or non-university as their highest level of education during the post-TAGS period compared with during TAGS. There were fewer drinkers with any university education as their highest level of education during the post-TAGS period than during TAGS.

The difference in the religious following of drinkers was analyzed using chi-square. With the original coding of this variable, six cells (37.5%) had expected counts less than five. For this reason, the less popular religious faiths were grouped together as 'other.' When the data were recoded, 'other' represented no religion, Jehovah's Witness, Gospel Hall, Seventh Day Adventist, Non-denominational and other. With the data recoded, the assumptions of chi-square were met.

The results of the chi-square indicate that there is a significant difference in the religious following of drinkers when drinkers are grouped according to phase of the study ($X^2 = 21.15$, df = 5, p = .00). During the post-TAGS period, there was a greater percentage of drinkers from the United Church, Anglican, Salvation Army and Pentecostal faiths than during the time when TAGS was in place. Similarly, there were fewer drinkers of Roman Catholic faith in the post-TAGS period compared with during TAGS. The standardized residuals for the contingency table are shown in Table 14.

Table 14

Standardized Residuals for Chi-Square of Religious Following of Drinkers by Phase of the Study

	Religious Following					
	Roman Catholic	United Church	Anglican	Salvation Army	Pentecostal	Other
During TAGS	2.4	- .4	- .4	- 1.4	- 1.4	.3
After TAGS	- 2.5	.4	.4	1.5	1.5	- .3

The absolute values of the standardized residuals indicate that the religious representation by Roman Catholic drinkers was an important contributor to the value of the chi-square. Cramer's *V* indicated a weak significant relationship between the two variables (Cramer's $V = .16$, p = .00).

The Mann Whitney Test was used to determine whether there was any significant change in household income among drinkers from the time when TAGS was in place to

after TAGS was withdrawn. Of note is that not all drinkers reported their income. Overall, only 49% of drinkers reported their household income. During TAGS, 58.4% of drinkers reported their household income, while after TAGS only 38.5% of drinkers reported their household income. The results of the Mann Whitney Test indicate that there is no significant difference in the household income of drinkers who reported their household income when they are grouped according to phase of the study ($z = -.41$, $p = .68$).

The Mann Whitney Test was used to determine whether there was any change in the income of individual drinkers from the time when TAGS was in place to after TAGS was withdrawn. Again it is noteworthy that not all drinkers reported their individual income. Overall, 53.9% of drinkers reported their individual income. During TAGS, 63.6% of drinkers reported their income, while after TAGS only 43% of drinkers reported their income. The results of the Mann Whitney Test indicate that after TAGS, drinkers reportedly earned a significantly higher income than their counterparts during TAGS ($z = -2.41$, $p = .02$). The distribution of drinkers' incomes according to phase of the study is shown in Table 15.

Table 15

Frequency Distribution of Drinkers' Income According to Phase of the Study

Income of Drinkers	During TAGS N = 269		After TAGS N = 162		Total Sample N = 431	
	N	%	N	%	N	%
< 10,000	125	46.5	60	37.0	185	42.9
10,001 – 20,000	97	36.1	59	36.4	156	36.2
20,001 – 30,000	25	9.3	26	16.0	51	11.8
30,001 – 40,000	16	5.9	2	1.2	18	4.2
40,001 – 50,000	5	1.9	6	3.7	11	2.6
50,001 – 60,000	1	.4	5	3.1	6	1.4
60,001 – 80,000	0	0	1	.6	1	.2
80,001 – 100,000	0	0	3	1.9	3	.7

During TAGS, more than 46% of drinkers reportedly earned less than $10,000 before taxes and deductions during the year prior to data collection. During TAGS, no drinker reportedly earned greater than $60,000 before taxes and deductions during the year prior to data collection.

While there is a significant difference in drinkers' income according to phase of the study, it is not possible to determine whether there has been any real change in the income of drinkers from the time when TAGS was in place to after TAGS was withdrawn because of the scale of measurement of the income variable. Income was

measured using an ordinal scale. During TAGS, drinkers reportedly earned a median income of between $10,001 and $20,000 per year before deductions. Drinkers after TAGS reportedly earned the same median income as their during-TAGS counterparts at $10,001 – $20,000 per year before deductions. Therefore, it is not possible to use the inflation rate to assess real change in income experienced by drinkers.

The Median Test was used to determine whether there was any difference in the degree of self-perceived stress between drinkers during TAGS and after TAGS was discontinued. The results indicate that drinkers reportedly experienced significantly less stress during the post-TAGS period than during TAGS (Median Test $X^2 = 22.6$, $p = .00$). The distribution of the degree of self-perceived stress of drinkers is shown in Table 16.

Table 16

Frequency Distribution of Self-Perceived Stress of Drinkers According to Phase of the Study

Degree of Self-Perceived Stress	During TAGS N = 423		After TAGS N = 376		Total Sample N = 799	
	N	%	N	%	N	%
Very stressful	45	10.6	26	6.9	71	8.9
Somewhat stressful	209	49.4	137	36.4	346	43.3
Not very stressful	120	28.4	171	45.5	291	36.4
Not at all stressful	49	11.6	42	11.2	91	11.4

After TAGS, fewer drinkers reportedly felt any stress at all compared with during TAGS. Similarly, a greater percentage of drinkers reportedly felt not very stressed after TAGS compared with during TAGS.

Summary. Statistically, the demographics of participants and of drinkers during and after the termination of TAGS are different. In all cases, similar differences are observed between time periods for the entire sample of participants and when the sample is limited to only those participants who had reportedly consumed alcohol at least once in the year prior to data collection. First, participants and drinkers studied during the post-TAGS period are older and more educated than those studied during TAGS. Second, there is less unemployment, hence more employment among the post-TAGS sample than among the during-TAGS sample. Among the unemployed at the time of data collection, participants and drinkers during TAGS were jobless for significantly longer periods of time than their post-TAGS counterparts. Third, participants and drinkers after TAGS have a higher income compared with their counterparts during TAGS. Fourth, the post-TAGS sample reported significantly less self-perceived stress compared with the sample during TAGS. Finally, participants studied during the post-TAGS period consisted of fewer members of Roman Catholic faith and more participants of Salvation Army and Pentecostal faith when compared with participants studied during TAGS. Drinkers studied during the post-TAGS period consisted of fewer members of Roman Catholic faith when compared with drinkers studied during TAGS.

Overall Change in Alcohol Consumption

The first research question is, "Has alcohol consumption among drinkers changed from the time when TAGS was in place to after TAGS was withdrawn?" First, data were analyzed to determine whether there had been any change in the frequency of alcohol consumption. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The assumption of similarity of shapes of distributions of the Mann Whitney Test was violated using the K-S two-sample goodness-of-fit test (K-S z = 1.368, p = .047). Therefore, the Median Test was used to test the hypothesis. The results of the Median Test are shown in Table 17.

Table 17

Change in Frequency of Alcohol Consumption Among Drinkers Between Time Periods

					Median Test	
		N	Mean	Median	X^2	p
Frequency of Alcohol Consumption	During TAGS	423	4.5	5	4.78	.03
	After TAGS	376	4.8	5		

The results of the Median Test indicate that drinkers after TAGS reportedly consumed alcohol less often than their counterparts during TAGS (Median Test X^2 =

4.78, p = .03). The null hypothesis is therefore rejected. The distribution of the frequency of alcohol consumption for each time period is shown in Table 18.

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Table 18

Distribution of Alcohol Consumption Frequency Among Drinkers by Phase of the Study

Frequency of Alcohol Consumption	During TAGS N = 423		After TAGS N = 376		Total Sample N = 799	
	N	%	N	%	N	%
Every day	18	4.3	6	1.6	24	3
4-6 times a week	10	2.4	9	2.4	19	2.4
2-3 times a week	67	15.8	42	11.2	109	13.6
Once a week	108	25.5	87	23.1	195	24.4
Once or twice a month	87	20.6	86	22.9	173	21.7
Less than once a month	132	31.2	146	38.8	278	34.8

During TAGS, 4.3% of drinkers reportedly consumed alcohol daily. This percentage was reduced in the post TAGS period to 1.6%. Similarly, 31.2% of drinkers reportedly consumed alcohol less than once a month during the TAGS period. This number increased to 38.8% of drinkers in the after-TAGS period.

Data were analyzed to determine whether there had been any change in the quantity of consumed alcohol among drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Median Test was used to test this hypothesis because the assumption of similarity of distributions of the Mann Whitney Test was violated (K-S z = 1.40, p = .04). The results of the Median Test are shown in Table 19.

Table 19

Change in Quantity of Consumed Alcohol Among Drinkers Between Time Periods

Weekly Quantity of Consumed Alcohol	N	Mean	Median	Range	Median Test	
					X^2	p
During TAGS	422	5.0	2.0	0 – 112	6.90	.01
After TAGS	362	3.5	1.0	0 – 46		

The results of the Median Test indicate that there was a significant decrease in the amount of weekly consumed alcohol among drinkers from the time when TAGS was in place to after TAGS was withdrawn (p = .01). The null hypothesis is therefore rejected. The frequency counts of the amount of weekly consumed alcoholic beverages of drinkers are shown in Table 20. After TAGS, a greater percentage of drinkers reportedly consumed no alcohol during the week prior to data collection than had self-reported no alcohol use during TAGS. Fewer drinkers reported consuming any amount of alcohol in

the after-TAGS period compared with drinkers during TAGS. During TAGS, 8.7% of drinkers reportedly consumed greater than 14 drinks during the week prior to data collection, compared with 5% of drinkers during the post-TAGS period.

Table 20

Frequency Distribution of Quantity of Consumed Alcohol Among Drinkers by Phase of the Study

Weekly Consumed Alcoholic Beverages	During TAGS N = 422		After TAGS N = 362		Total Sample N = 784	
	N	%	N	%	N	%
0	169	40.0	179	49.4	348	44.4
1 – 7	165	39.1	130	35.9	295	37.6
8 – 14	51	12.1	35	9.7	86	11.0
15 – 21	17	4.0	8	2.2	25	3.2
>21	20	4.7	10	2.8	30	3.8

Change in Alcohol Consumption Among Sub-groups

Low-income earners. Research question two a) asked, "Has alcohol consumption among low-income earners changed from the time when TAGS was in place to after TAGS was withdrawn?" In order to answer this question, low-income must first be defined. For this study, low income was defined using Low Income Cutoffs (LICO) as defined by Statistics Canada (1999). A LICO is an income threshold below which a

family will likely devote a larger share of its income to the necessities of food, shelter and clothing than an average family would. LICOs are adjusted according to family size and the size of the community in which the family resides. According to Statistics Canada, the LICO for an individual residing in a rural area between 1995 and 2001 ranges from $11,661 to $13,021 before taxes. This study measured income on an ordinal scale, with increments of $10,000. Using Statistics Canada's LICOs as a guideline, individuals earning less than $20,000 before taxes were considered low -income earners for this study.

The null hypothesis for the change in alcohol consumption frequency among low-income drinkers was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among low-income drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S $z = .52$, $p = .95$). The results are shown in Table 21.

Table 21

Change in Frequency of Alcohol Consumption Among Low-Income Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	222	4.6	5.0	118	4.7	5.0	- .92	.36

The results of the Mann Whitney Test indicate that there was no significant difference in the frequency of alcohol consumption among low-income drinkers from the time when TAGS was in place to after TAGS was discontinued ($z = - .92$, $p = .36$). The null hypothesis is therefore accepted.

In addition to examining low income as it related to an individual's income, data were also analyzed using LICOs for low-income households. For this study, the average family size was three persons per household. According to Statistics Canada (1999), the LICO for a family of three persons residing in a rural area between the years 1995 and 2001 ranges from $18,129 to $20,242 before taxes. Households earning less than $20,000 before taxes were considered to be low income.

The null hypothesis for the change in frequency of alcohol consumption among drinkers of low-income households was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among drinkers of low-income households from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S $z = 1.07$, $p = .21$). The results are shown in Table 22.

Table 22

Change in Frequency of Alcohol Consumption Among Drinkers of Low-Income Households Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	60	4.3	4.0	41	4.9	5.0	- 2.15	.03

The results of the Mann Whitney test indicate that drinkers of low-income households consumed alcohol significantly less often during the after-TAGS period than when TAGS was in place ($z = - 2.15$, $p = .03$). The null hypothesis is therefore rejected. The distribution of the frequency of alcohol consumption among drinkers of low-income households is shown in Table 23.

Table 23

Distribution of Alcohol Consumption Frequency Among Drinkers of Low-Income Households by Phase of the Study

Frequency of Alcohol Consumption	During TAGS N = 60		After TAGS N = 41		Total Sample N = 101	
	N	%	N	%	N	%
Every day	5	8.3	1	2.4	6	5.9
4 – 6 times a week	1	1.7	0	0	1	1.0
2 – 3 times a week	11	18.3	3	7.3	14	13.9
Once a week	15	25.0	9	22.0	24	23.8
Once or twice a month	12	20.0	13	31.7	25	24.8
Less often than once a month	16	26.7	15	36.7	31	30.7

The percentage of drinkers of low-income households reportedly consuming alcohol two to three times per week decreased from 18.3% during TAGS to just 7.3% after TAGS. The percentage of drinkers of low-income households reportedly consuming alcohol less often than once per month increased from 26.7% during TAGS to 36.7% after TAGS.

Weekly quantity of consumed alcohol was measured in addition to the frequency of alcohol consumption. Similar to the analysis conducted for determining frequency changes among low-income drinkers, the data were analyzed first using low-income individuals and second using drinkers of low-income households.

The null hypothesis for determining changes in the quantity of alcohol consumed among low-income drinkers was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among drinkers earning a low income from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = .82, p = .51). The results are shown in Table 24.

Table 24

Change in Quantity of Consumed Alcohol Among Low-Income Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	222	5.7	1.5	115	4.2	1.0	- .97	.33

The results indicate that there was no significant difference in the quantity of consumed alcohol among drinkers earning a low income from the time when TAGS was in place to after TAGS was withdrawn (z = - .97, p = .33). The null hypothesis is therefore accepted.

Data from drinkers of low-income households were also analyzed to determine if there had been any change in the amount of weekly consumed alcohol from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among drinkers of low-income households from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = 1.13, p = .15). The results are shown in Table 25.

Table 25

Change in Quantity of Consumed Alcohol Among Drinkers of Low-Income Households Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	60	6.6	3.0	39	2.8	1.0	- 2.05	.04

The results of the Mann Whitney Test indicate that drinkers of low-income households consumed significantly less amounts of alcohol per week after TAGS than during TAGS (z = - 2.05, p = .04). The null hypothesis is therefore rejected. The frequency distribution for the amount of weekly consumed alcohol among drinkers of low-income households is shown in Table 26.

Table 26

Frequency Distribution of Quantity of Consumed Alcohol Among Drinkers of Low-Income Households by Phase of the Study

Weekly Consumed Alcoholic Beverages	During TAGS N = 60		After TAGS N = 39		Total Sample N = 99	
	N	%	N	%	N	%
0	18	30.0	19	48.7	37	37.4
1 – 7	30	50.0	14	35.9	44	44.4
8 – 14	5	8.3	5	12.8	10	10.1
15 – 21	0	0	1	2.6	1	1.0
> 21	7	11.7	0	0	7	7.1

After TAGS there was a greater percentage of drinkers of low-income households who reportedly consumed no alcohol during the week prior to data collection compared with during TAGS. During TAGS, 11.7% of drinkers of low-income households reportedly consumed greater than 14 alcoholic drinks during the week prior to data collection, compared with only 2.6% of drinkers of low-income households after TAGS.

Males. Research question two b) asked, "Has alcohol consumption among male drinkers changed from the time when TAGS was in place to after TAGS was withdrawn?" Data were first analyzed to determine whether there was a significant difference in the frequency of alcohol consumption among male drinkers between the two time periods. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among male drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = 1.28, p = .08). The results are shown in Table 27.

Table 27

Change in Frequency of Alcohol Consumption Among Male Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	230	4.1	4.0	186	4.5	5.0	- 3.21	.001

The results of the Mann Whitney Test indicate that male drinkers consumed alcohol less frequently during the post-TAGS period than during TAGS (z = -3.21, p = .001). The null hypothesis is therefore rejected. The distribution of the frequency of alcohol consumption among male drinkers is shown in Table 28.

Table 28

Distribution of Alcohol Consumption Frequency Among Male Drinkers by Phase of the Study

Frequency of Alcohol Consumption	During TAGS N = 230		After TAGS N = 186		Total Sample N = 416	
	N	%	N	%	N	%
Every day	17	7.4	5	2.7	22	5.3
4 – 6 times a week	8	3.5	8	4.3	16	3.8
2 – 3 times a week	50	21.7	27	14.5	77	18.5
Once a week	65	28.3	50	26.9	115	27.6
Once or twice a month	46	20.0	37	19.9	83	20.0
Less often than once a month	43	18.7	59	31.7	102	24.5

Fewer male drinkers reportedly consumed alcohol on a daily basis (2.7%) during the post-TAGS period than during TAGS (7.4%). There was a large increase in the percentage of male drinkers who reportedly consumed alcohol less often than once a month during the post-TAGS period (31.7%) compared with during TAGS (18.7%).

Data were analyzed to determine whether there was any change in the quantity of consumed alcohol among male drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among male drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = 1.31, p = .06). The results are shown in Table 29.

Table 29

Change in Quantity of Consumed Alcohol Among Male Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	229	7.0	4.0	179	5.1	2.0	- 2.59	.01

The results of the Mann Whitney Test indicate that during the post-TAGS period, male drinkers reportedly consumed less alcohol than during TAGS (z = - 2.59, p = .01). The null hypothesis is therefore rejected. The frequency distribution of the quantity of alcohol consumed among male drinkers is shown in Table 30.

Table 30

Frequency Distribution of Quantity of Consumed Alcohol Among Male Drinkers by Phase of the Study

Weekly Consumed Alcoholic Beverages	During TAGS N = 229		After TAGS N = 179		Total Sample N = 408	
	N	%	N	%	N	%
0	66	28.9	75	41.9	141	34.6
1 – 7	89	38.9	62	34.6	151	37.0
8 – 14	45	19.7	27	15.1	72	17.6
15 – 21	12	5.2	6	3.4	18	4.4
> 21	17	7.4	9	5.0	26	6.4

The percentage of male drinkers who abstained from alcohol in the week prior to data collection was considerably higher in the post-TAGS period (41.9%) than during TAGS (28.9%). Additionally, 12.6% of male drinkers reportedly consumed greater than 14 drinks during the week prior to data collection during TAGS, compared with 8.4% of male drinkers during the post-TAGS period.

Single persons. Research question two c) asked, "Has alcohol consumption among single drinkers changed from the time when TAGS was in place to after TAGS was withdrawn?" In order to determine the difference in alcohol consumption among single drinkers, it was first necessary to define single persons. In the study, single persons were defined in two ways. First, single persons were defined as participants classifying themselves as non-partnered, and so included participants who were divorced,

separated, widowed and never married. Second, single persons were quantified as solely those participants who classified themselves as never married. The analysis was carried out for both non-partnered drinkers and drinkers who were never married.

Data were first analyzed to determine whether there was any change in the frequency of alcohol consumption among non-partnered drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among non-partnered drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions for the Mann Whitney Test were met (K-S z = .38, p = 1.0). The results are shown in Table 31.

Table 31

Change in Frequency of Alcohol Consumption Among Non-Partnered Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	125	4.7	5.0	95	4.8	5.0	- .77	.44

The results of the Mann Whitney Test indicate that there was no significant difference in the frequency of alcohol consumption among non-partnered drinkers from

the time when TAGS was in place to after TAGS was withdrawn ($z = -.77$, $p = .44$). The null hypothesis is therefore accepted.

Data were also analyzed to determine whether there was any change in the frequency of alcohol consumption among single drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among single drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S $z = .29$, $p = 1.0$). The results are shown in Table 32.

Table 32

Change in Frequency of Alcohol Consumption Among Drinkers who are Single Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	99	4.7	5.0	71	4.8	5.0	-.28	.78

The results of the Mann Whitney Test indicate that there was no significant difference in the frequency of alcohol consumption among single drinkers from the time when TAGS was in place to after TAGS was withdrawn ($z = -.28$, $p = .78$). The null hypothesis is therefore accepted.

Data were analyzed to determine whether there was any change in the quantity of consumed alcohol among non-partnered drinkers from the time when TAGS was in place to after TAGS was withdrawn. Recall that non-partnered participants are those participants who are either divorced, separated, widowed or who have never been married. This definition is in comparison to single participants, who are those participants who have never been married. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among non-partnered drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = .82, p = .52). The results are shown in Table 33.

Table 33

Change in Quantity of Consumed Alcohol Among Non-Partnered Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	125	5.1	2.0	93	3.8	1.0	- 1.19	.23

The results of the Mann Whitney Test indicate that there was no significant difference in the quantity of consumed alcohol among non-partnered drinkers from the

time when TAGS was in place to after TAGS was withdrawn ($z = -1.19$, $p = .23$). The null hypothesis is therefore accepted.

Data were analyzed to determine whether there was any change in the quantity of consumed alcohol among single drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among single drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitey Test were met (K-S $z = .39$, $p = 1.0$). The results are shown in Table 34.

Table 34

Change in Quantity of Consumed Alcohol Among Drinkers who are Single Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	99	5.0	1.0	70	4.6	1.0	-.11	.91

The results of the Mann Whitney Test indicate that there was no significant difference in the quantity of consumed alcohol among single drinkers from the time when TAGS was in place to after TAGS was withdrawn ($z = -.11$, $p = .91$). The null hypothesis is therefore accepted.

Unemployed persons. Research question two d) asked, "Has alcohol consumption among unemployed drinkers changed from the time when TAGS was in place to after TAGS was withdrawn?" Data were first analyzed to determine whether there was any difference in the frequency of alcohol consumption among unemployed drinkers between the two time periods. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among unemployed drinkers from the time when TAGS was in place to the time after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = 1.13, p = .16). The results are shown in Table 35.

Table 35

Change in Frequency of Alcohol Consumption Among Unemployed Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	189	4.3	4.0	52	4.8	5.0	- 2.22	.03

The results of the Mann Whitney Test indicate that unemployed drinkers consumed alcohol less frequently during the post-TAGS period than during TAGS (z = - 2.22, p = .03). The null hypothesis is therefore rejected. The distribution of the frequency of alcohol consumption among unemployed drinkers is shown in Table 36.

Table 36

Distribution of Alcohol Consumption Frequency Among Unemployed Drinkers by Phase of the Study

Frequency of Alcohol Consumption	During TAGS N = 189		After TAGS N = 52		Total Sample N = 241	
	N	%	N	%	N	%
Every day	8	4.2	1	1.9	9	3.7
4 – 6 times a week	4	2.1	4	7.7	8	3.3
2 – 3 times a week	37	19.6	4	7.7	41	17.0
Once a week	57	30.2	11	21.2	68	28.2
Once or twice a month	35	18.5	10	19.2	45	18.7
Less often than once a month	47	24.9	22	42.3	69	28.6

After TAGS, a lesser percentage of unemployed drinkers consumed alcohol two to three times per week (7.7%) compared with during TAGS (19.6%). After TAGS, a greater percentage of unemployed drinkers consumed alcohol less often than once per month (42.3%), compared with during TAGS (24.9%).

In addition to assessing for changes in the frequency of alcohol consumption, data were analyzed to determine whether there was any change in the quantity of consumed alcohol among unemployed drinkers from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol

among unemployed drinkers from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney test were met (K-S z = 1.24, p = .10). The results are shown in Table 37.

Table 37

Change in Quantity of Consumed Alcohol Among Unemployed Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Weekly Quantity of Consumed Alcohol	188	7.1	4.0	52	5.1	1.0	- 2.36	.02

The results of the Mann Whitney test indicate that during the post-TAGS period, unemployed drinkers consumed significantly less alcohol than during TAGS (z = - 2.36, p = .02). The null hypothesis is therefore rejected. The frequency distribution of the quantity of consumed alcohol among unemployed drinkers is shown in Table 38.

Table 38

Frequency Distribution of Quantity of Consumed Alcohol Among Unemployed Drinkers by Phase of the Study

Weekly Consumed Alcoholic Beverages	During TAGS N = 188		After TAGS N = 52		Total Sample N = 240	
	N	%	N	%	N	%
0	54	28.7	25	48.1	79	32.9
1 – 7	74	39.4	15	28.8	89	37.1
8 – 14	34	18.1	6	11.5	40	16.7
15 – 21	12	6.4	2	3.8	14	5.8
> 21	14	7.4	4	7.7	18	7.5

During the post-TAGS period, a greater percentage of unemployed drinkers consumed no alcohol during the week prior to data collection (48.1%) compared with the time during TAGS (28.7%). During TAGS, 13.8% of unemployed drinkers reportedly consumed greater than 14 alcoholic drinks during the week prior to data collection, compared with only 11.5% of unemployed drinkers after TAGS.

Self-perceived stressed persons. Research question two e) asked, "Has alcohol consumption among drinkers who perceive themselves as stressed changed from the time when TAGS was in place to after TAGS was withdrawn?" Drinkers who had described their life as somewhat stressful or very stressful were included in the analysis. Data were first analyzed to determine whether there was any difference in the frequency of alcohol

consumption among drinkers who perceive themselves as stressed between the two time periods. The null hypothesis was:

Ho: There is no statistically significant difference in the frequency of alcohol consumption among drinkers who perceive themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn.

The Mann Whitney Test was used to test the hypothesis. The assumptions of the Mann Whitney Test were met (K-S z = .46, p = .99). The results are shown in Table 39.

Table 39

Change in Frequency of Alcohol Consumption Among Self-Perceived Stressed Drinkers Between Time Periods

	During TAGS			After TAGS			Mann Whitney	
	N	Mean	Median	N	Mean	Median	z	p
Frequency of Alcohol Consumption	254	4.6	5.0	163	4.7	5.0	- 1.11	.27

The results of the Mann Whitney Test indicate that there was no significant difference in the frequency of alcohol consumption among drinkers who perceive themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn (z = - 1.11, p = .27). The null hypothesis is therefore accepted.

Data were analyzed to determine whether there was any significant change in the quantity of consumed alcohol among drinkers who perceive themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn. The null hypothesis was:

Ho: There is no statistically significant difference in the quantity of consumed alcohol among drinkers who perceive themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn.

The Median Test was used because the assumption of similarity of shapes of distributions of the Mann Whitney Test was violated (K-S z = 1.37, p = .048). The results are shown in Table 40.

Table 40

Change in Quantity of Consumed Alcohol Among Self-Perceived Stressed Drinkers Between Time Periods

Weekly Quantity of Consumed Alcohol	N	Mean	Median	Range	Median Test X^2	p
During TAGS	253	4.7	2.0	0 – 112	3.44	.06
After TAGS	160	3.8	0.5	0 – 46		

The results of the Median Test indicate that there was no significant difference in the quantity of consumed alcohol among drinkers who perceive themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn (Median X^2 = 3.44, p = .06). The null hypothesis is therefore accepted.

A summary of the findings relating to the research questions is shown in Table 41.

Table 41

Alcohol Consumption Patterns of Sub-groups

Subgroup	During TAGS		After TAGS	
	Median Frequency	Mean Quantity	Median Frequency	Mean Quantity
Total Sample	Once or twice per month*	5.0**	Once or twice per month*	3.5**
Low-income Earners	Once or twice per month	5.7	Once or twice per month	4.2
Low-income Households	Once per week*	6.6*	Once or twice per month*	2.8*
Males	Once per week**	7.0**	Once or twice per month**	5.1**
Non-Partnered	Once or twice per month	5.1	Once or twice per month	3.8
Single	Once or twice per month	5.0	Once or twice per month	4.6
Unemployed	Once per week*	7.1*	Once or twice per month*	5.1*
Self-Perceived Stress	Once or twice per month	4.7	Once or twice per month	3.8

*$p \leq .05$. **$p \leq .01$

Summary

This chapter presented the findings of the statistical analysis. The demographic differences between the time when TAGS was in place and after TAGS was discontinued were similar for the entire sample and the sample including only drinkers. Drinkers during the post-TAGS period were older and more educated than their during-TAGS counterparts. Also, there was less unemployment and thus more employment during the post-TAGS period than during TAGS. Among those drinkers that were unemployed, the duration of unemployment was significantly less during the post-TAGS period compared with during TAGS. Drinkers during the post-TAGS period earned a higher income than their during-TAGS counterparts and reportedly experienced significantly less stress than drinkers during TAGS. Finally, the post-TAGS sample of drinkers was represented by significantly fewer individuals of Roman Catholic faith when compared to the during-TAGS sample.

The consumption of alcohol has decreased between time periods among drinkers in the study area. More specifically, the consumption of alcohol has decreased among the entire sample of drinkers and among the following high-risk groups: unemployed persons, males and drinkers of low-income households. There was no significant change in the alcohol consumption pattern of low-income individuals who were drinkers, drinkers who were either non-partnered or single, or drinkers who perceived themselves as stressed from the time when TAGS was in place to after TAGS was withdrawn.

Chapter 5

Discussion

The purpose of this study was twofold. Firstly, the study sought to determine whether alcohol consumption patterns in an area of Newfoundland and Labrador that was highly impacted by the cod moratorium of the 1990s had changed from a time when community members were receiving income support to a time after they were not. Secondly, the study sought to determine whether there had been any change in alcohol consumption patterns among specific high-risk groups of drinkers in the community. This chapter will discuss major findings of the study, offering possible explanations for the observed findings. Where possible, links are made between the study's findings and the findings of other research related to alcohol consumption.

Demographic Characteristics

As described in Chapter Four, the study's sample changed demographically from the time when TAGS was in place to after TAGS was withdrawn. One explanation for the observed demographic differences is that while both phases of the study employed random sampling to obtain participants, participants interviewed during TAGS are not necessarily the same as those participants interviewed after TAGS. If, in fact, some participants are the same, it is purely by chance. Still, given that random sampling was used, there remains the question of how the population of the study area could have changed demographically within a maximum time period of only eight years.

Newfoundland and Labrador has a long history of out-migration. That is, rural Newfoundlanders and Labradoreans have a history of leaving their hometowns to move to larger towns and cities within the province, or to leave the province altogether, primarily in search of employment. The government of Newfoundland and Labrador has reported a net loss of population consistently each year since 1982-83 (Newfoundland & Labrador Statistics Agency, 2006a). Naturally, after the collapse of the cod fishery in the 1990s, Newfoundland and Labrador communities that had long relied on the fishery for employment lost many of their community members to other towns and cities that were able to provide income and employment. The population of the Bonavista/Trinity area has declined fairly steadily from 42,106 in 1996 to 36,486 in 2005 (Newfoundland & Labrador Statistics Agency, 2006b). This translates into a loss of population of roughly 13.3% in a nine year period. Most likely, it is the younger, employable portion of the population that is leaving rural Newfoundland and Labrador communities, either for a) post-secondary education, or b) employment opportunities. This is one possible explanation for the observed increase in age among participants during the post-TAGS phase of the study.

With the collapse of the cod fishery, the opportunity to leave school at a young age and be readily able to find employment within rural Newfoundland and Labrador communities has diminished. Historically, many young rural Newfoundlanders and Labradoreans did not finish secondary school, but instead opted to leave their studies to join older family members and community members in the fishing industry. Perhaps not until the collapse of the northern cod stocks had Newfoundlanders and Labradoreans

even considered the volatility of the reliance upon a natural resource for income. As John Cabot reportedly said, the waters were so full of cod fish that one could walk upon the water. When the cod fishery was doing well, families likely did not discourage young people from leaving school because at that time, it was unthinkable that the waters would run out of fish. Now, of course, Newfoundlanders and Labradoreans are all too aware of the uncertainty that exists in the reliance on natural resources as a source of income. Young rural Newfoundlanders and Labradoreans may complete post-secondary education in order to spare themselves the hardship experienced by many of their family and community members. This is one possible explanation for the higher education level observed among post-TAGS participants. Also, during the early years of the cod moratorium, occupational retraining was offered to TAGS recipients. This may also have contributed to the observed increase in education seen among post-TAGS participants.

The change in employment observed in the Bonavista Headland area from the time when TAGS was in place to after TAGS was withdrawn is quite remarkable. During TAGS, 41% of participants and 44.7% of drinkers were unemployed, compared with only 12.3% and 14.1% of participants and drinkers in the post-TAGS period, respectively. One possible explanation for this observed change is that phase one of data collection was completed relatively soon after the collapse of the cod fishery such that persons that were unemployed as a result of the moratorium were still "stunned" psychologically and emotionally, which had perhaps impeded their ability to look for new work. Also during those initial years of the moratorium, Newfoundlanders and

Labradoreans were still hopeful that the cod stocks would recover and that the fishery would return to a sustainable industry. As time passed, Newfoundlanders and Labradoreans that had relied on the fishery began to lose hope that the fishery would recover. Many people that were initially unemployed perhaps left the area and/or the province to look for work elsewhere, contributing to the decreased unemployment observed among participants and drinkers during phase two of data collection. Those that did stay in the Bonavista Headland area became aware of the need to find other sources of income. For example, those that worked in the fishery diversified their species' and began to include other more sustainable fish-stocks such as crab, shrimp and capelin. The Bonavista Headland area also took advantage of its rich history and turned to tourism as a source of revenue for the area and for employment for local citizens. Located in Bonavista, The Ryan Premises, a restored fish merchant's premises, tells the 500 year history of the east coast fishery and has become a National Historic Site of Canada.

I believed at the beginning of this study that participant incomes would be lower during the post-TAGS phase of data collection because participants would have lost a source of income when the TAGS program ended. The end of TAGS and the continuation of the cod moratorium were factors that would place study participants at risk of receiving a lower income than they were when they were receiving Federal monies through TAGS. Surprisingly, individual income was actually higher during the post-TAGS period than during TAGS. The possible emigration from the Bonavista Headland area of individuals who were unemployed as a result of the cod moratorium may mean that those individuals who still reside in the study area are individuals who had

or were able to find other sources of income. This may account for the higher individual incomes observed among study participants during the post-TAGS period.

Another surprising demographic change was the decrease in stress level reported by participants during the post-TAGS period. As with income, I originally thought that because of the withdrawal of TAGS support and the continuation of the cod moratorium, study participants would be more likely to report higher levels of stress than when they were receiving income support through TAGS. This was not the case. Perhaps study participants reported feeling less stress because of an adaptation of the region to the collapse of the cod fishery. Perhaps the study's participants had developed healthier coping mechanisms such as strengthening their religious faith and developing strong community ties. Perhaps the increase in individual income reported by the study's participants has reduced their psychological stress from financial strain. Perhaps also, individuals who were stressed had moved from the study area as a means of coping with their stress.

Overall Change in Alcohol Consumption

I originally thought that alcohol consumption may have increased during the post-TAGS period when compared with during TAGS as a response to the psychological stress associated with the continuation of the cod moratorium and the discontinuation of income replacement measures. Unexpectedly, drinkers reported significantly lower rates of alcohol consumption during the post-TAGS time period than during TAGS.

Surprisingly, drinkers during the post-TAGS period reportedly were experiencing less stress than drinkers during the time when TAGS was in place. The observed decrease in self-perceived stress among drinkers during phase two of the study offers one possible explanation for the observed decline in alcohol consumption. As suggested by psychosocial theory, the study's drinkers who may have been using alcohol as a means to cope with the stress of the initial moratorium announcement may have changed their coping skills to more healthy coping strategies. It is also possible that those drinkers that were using alcohol as a means to cope with the original moratorium have adjusted to life without the cod fishery and no longer feel the stress associated with that loss of livelihood, leading to a decrease in alcohol consumption. The findings of the present study are similar to the findings of other researchers who have found, in accordance with a psychosocial theory relating to alcohol consumption, that alcohol consumption is increased during periods when stress levels are higher (Abbey et al., 1993; Carney et al., 2000; Dee, 2001; Suter et al., 1997).

Another possible, albeit unlikely explanation for the decrease in alcohol consumption from the time when TAGS was in place to the time after TAGS was withdrawn is that drinkers in the post-TAGS phase were significantly older than drinkers in the during-TAGS phase. The mean age of drinkers during TAGS was 40.2 years, while the mean age of drinkers after TAGS was 43.7 years. While it is widely accepted that alcohol consumption in the adult population decreases as age increases (Andrews & Layne, 1985; Casswell et al., 2003; Dee, 2001; Gili et al., 1989; Goodwin et al., 1987; Hunter et al., 1982; McKim & Quinlan, 1991; Single et al., 1995), given the narrow gap

in the mean age of drinkers from the during-TAGS phase to after-TAGS, it is unlikely that this age difference would account for the observed changes in alcohol consumption.

Another possible explanation for the observed decrease in alcohol consumption is the difference in the employment status of drinkers. During TAGS, only 27% of drinkers were employed, compared with 50.1% of drinkers during the post-TAGS period. Similarly, 44.7% of drinkers during TAGS were unemployed compared with only 14.1% of drinkers after TAGS. While it cannot be said with certainty, the findings of the present study suggest that there may be a positive association between unemployment and alcohol consumption. This is in agreement with the findings of some researchers (Catalano et al., 1993; Fleming et al., 1998; Gomberg et al., 1999; Janlert & Hammarstrom, 1992; Layne & Whitehead, 1985; Power & Estaugh, 1990), but is contradictory to the findings of other researchers (Brenner, 1975; Dooley et al., 1992; Leino-Arjas et al., 1999; Lester, 1996).

The duration of unemployment may also be a possible explanation for the decrease in alcohol consumption observed among drinkers from the time when TAGS was in place to the time after TAGS was withdrawn. During TAGS, the mean length of time that unemployed drinkers were seeking work was 108.6 weeks, compared with a mean of 46.2 weeks seeking work by unemployed drinkers after TAGS. Power and Estaugh (1990) and Janlert and Hammarstrom (1992) found that the duration of unemployment was significantly related to higher consumption of alcohol. In opposition to this finding, Leino-Arjas et al. (1999) found that long-term unemployment was associated with lower consumption of alcohol.

The income of drinkers' households was found to be higher during the post-TAGS period than during TAGS. According to the findings of other researchers who have found an inverse relationship between income and alcohol consumption (Alem et al., 1999; Brenner, 1975; Gili et al., 1989; Harrison & Gardiner, 1999; Hunter et al., 1982; Moreira et al., 1996), this may be another explanation for the observed decrease in alcohol consumption during phase two of the study.

Another possible explanation for the decrease in alcohol consumption during the post-TAGS period compared with during TAGS is the religious following of study participants. During the post-TAGS period, there were fewer drinkers of Roman Catholic faith than during the time when TAGS was in place. The Roman Catholic Church is more accepting of alcohol consumption than Protestant faiths (Engs, 2000) and so drinkers of the Roman Catholic faith may be more likely to consume alcohol without violating religious principles. Also, given the socially stigmatizing nature of alcohol consumption in terms of religious faith, it may be that Roman Catholic drinkers were more likely to report their alcohol consumption without fear of betraying their religious principles than drinkers of Protestant faiths such as Pentecostal or Salvation Army, who would be betraying their religious faith's beliefs by consuming alcohol. Because data were collected by community members, it may be that Protestant drinkers under-reported their alcohol consumption for fear of having admittedly betrayed their religious beliefs. It is possible that the data collectors, who were members of the community, were of Protestant faiths that discourage the consumption of alcohol, such as Salvation Army or

Pentecostal, and that participants who were aware of the religious faith of the interviewer were less likely to report their alcohol consumption for fear of being looked down upon.

There are other possible explanations for the observed decrease in alcohol consumption among the study's drinkers from the time when TAGS was in place to the time after the TAGS program had been discontinued. As previously stated, it was not the purpose of this study to determine which factors that are known to influence the consumption of alcohol were responsible in contributing to alcohol consumption in this population. The purpose of this study was to assess how the consumption of alcohol among drinkers had changed from the time when TAGS was in place to a time after TAGS had been terminated.

It is possible that the general education of the study's drinkers regarding the harmful effects of alcohol consumption had increased between the two phases of data collection. Media campaigns, such as those of organizations such as Mothers Against Drunk Driving (MADD), may have been effective in changing the alcohol consumption pattern of the study area's drinkers. The population in general is flooded with media attention to health improvement issues, including weight loss, healthy eating and exercise, to name a few. It is possible that everyone living in the study area has become more educated regarding the harmful effects of alcohol and that the consumption of alcohol had decreased among the general population.

Change in Alcohol Consumption Among Subgroups

Low-income earners. Because individual income was measured categorically and the appropriate LICO fell within the $10,001 to $20,000 range, a more conservative estimate of low-income was selected by categorizing all drinkers who earned less than $20,000 per year as low income. Subsequently, the findings of any research question based on that measure are conservative. The study found no significant change in the frequency or quantity of alcohol consumption among low-income drinkers from the time when TAGS was in place to the time after TAGS was withdrawn. The conservative measure of the cutoff used for individual low-income may have contributed to the study's finding. Perhaps if a lower cutoff were used to estimate individuals earning a low-income, a statistically significant difference would have been detected. That is not to say that a statistically significant decrease in alcohol consumption was expected among this high-risk group. This is mentioned only to point out that had a lower, more accurate LICO been used, perhaps a statistically significant change in alcohol consumption among this group may have been found.

The average reported alcohol consumption pattern of low-income drinkers is in accordance with the low-risk drinking guidelines set forth by the Centre for Addiction and Mental Health (2003), which states that women should consume no more than nine drinks per week and men no more than fourteen. However, while the mean and median values for the quantity and frequency of alcohol consumption may portray a safe alcohol consumption pattern for low-income drinkers, it is evident that not all low-income drinkers consumed alcohol at the mean and median values. Clearly, there are individuals

within this subgroup who consumed alcohol above the mean and median values and in a manner that would increase their risk for experiencing negative health and social consequences of their alcohol consumption. Also, the fact that no significant change in the alcohol consumption of low-income drinkers was detected while alcohol consumption within the sample of drinkers as a whole declined from the time when TAGS was in place to after TAGS was withdrawn suggests that receiving a low income may be a risk factor for alcohol consumption. That being said, the purpose of the present study was to determine whether or not alcohol consumption had changed among drinkers of the study population. The purpose was not to determine cause and effect relationships. Also, because participants were not followed over time, cause and effect relationships cannot be determined. The study's findings provide no direct evidence either in support of or in refute of the claim that low income may be a risk factor for alcohol consumption. Further research is necessary to determine whether or not this is the case.

While the study did not detect significant differences in the alcohol consumption pattern of low-income drinkers between phases, the study did find that alcohol consumption among drinkers of low-income households was lower during the post-TAGS period than during TAGS. The estimate of a LICO for household income was more precisely fitting of Statistics Canada's (1999) LICO for rural households of three people than the LICO used for individual income. This may be one reason that a statistically significant difference was detected.

When looking at solely the mean weekly consumed amount of alcohol of drinkers of low-income households, it seems that drinkers of both phases were within

safe drinking guidelines according to the Centre for Addiction and Mental Health (2003), having consumed less than nine standard drinks during the week prior to data collection. However, Table 24 shows that there were drinkers of low-income households during both phases of the study who reportedly consumed greater than eight alcoholic drinks during the week prior to data collection. Albeit that during TAGS more drinkers of low-income households had reportedly consumed greater than eight alcoholic drinks during the week prior to data collection than drinkers of low-income households after TAGS.

The fact that there was a significant difference in the alcohol consumption pattern observed among drinkers of low-income households from the time when TAGS was in place to after TAGS was withdrawn suggests that in addition to receiving a low-income, other factor(s) are contributing to the observed change in alcohol consumption pattern.

Male drinkers. When looking at the mean reported quantity of alcohol consumed by male drinkers, it seems that according to the Centre for Addiction and Mental Health (2003), male drinkers in both phases of the study on average consumed alcohol within acceptable limits by consuming less than fourteen drinks during the week prior to data collection. The Centre for Addiction and Mental Health defines one standard drink as equivalent to 5 ounces of wine, 1.5 ounces of spirits or 12 ounces of regular strength beer. This definition is similar to the definition of a standard drink used in this study, implying that the quantity of reported consumed alcohol is transferable.

Table 30 shows that there were male drinkers during both phases of the study who had reportedly consumed greater than 14 alcoholic drinks during the week prior to data

collection. The table also shows that during TAGS there were proportionately more male drinkers who had reportedly consumed greater than 14 drinks than after TAGS.

The fact that a significant difference in alcohol consumption pattern was detected among drinking males between the two time periods suggests that in addition to gender, other factor(s) are influencing the observed alcohol consumption pattern. Perhaps the other demographic changes observed among the sample of drinkers played a role in influencing the observed change in alcohol consumption among this high-risk group.

Single persons. Regardless of whether single persons were quantified as drinkers who were non-partnered or never married, no significant change in alcohol consumption pattern was found for this high risk group. In both phases of the study, for both groups of single persons, the mean and median reported alcohol consumption was within acceptable low-risk drinking guidelines set forth by the Centre for Addiction and Mental Health (2003). However, as with low-income drinkers, it is clear that not all single and non-partnered drinkers consumed alcohol at the mean and median values. Those drinkers that consumed more alcohol, more often are at increased risk of experiencing the negative effects of alcohol consumption. Additionally, the fact that single drinkers did not change their alcohol consumption from the time when TAGS was in place to after TAGS was withdrawn while the general sample of drinkers did decrease their consumption suggests that being single may be a risk factor for alcohol consumption. Other research has found that single persons are at high risk of harmful levels of alcohol consumption (Single et al., 1995). Because the research questions and subsequent data analysis do not allow for the determination of cause and effect relationships, the present study's findings do not

offer evidence supporting or refuting the claim that marital status is a risk factor for alcohol consumption. All that can be said is that this may be so. Further research is needed to determine if and how marital status influences the consumption of alcohol.

Considering the mean age of this study's drinkers was 41.8 years, it may be that no difference in alcohol consumption was found among single drinkers because of an interaction effect between age and marital status. Certainly the majority of single people in the population are younger adults. It is known that alcohol consumption peaks at young adulthood and decreases thereafter (Andrews & Layne, 1985; Casswell et al., 2003; Dee, 2001; Gili et al., 1989; Goodwin et al., 1987; Hunter et al., 1982; McKim & Quinlan, 1991; Single, Brewster, MacNeil, Hatcher & Trainor, 1995). It is possible that an average low-risk alcohol consumption pattern was found for single people in the study because of the influence of age on the relationship between marital status and alcohol consumption.

Unemployed persons. Although the mean quantity of alcohol consumed by unemployed drinkers during the week prior to data collection is acceptable during both phases of the study according to low-risk drinking guidelines (Centre for Addiction and Mental Health, 2003), clearly there are unemployed drinkers in both phases of the study who reportedly consumed greater than the mean amount of alcohol during the week prior to data collection. Table 38 shows that there were unemployed drinkers during both phases of the study who reportedly consumed greater than the recommended safe amount of alcohol by consuming greater than 14 alcoholic drinks during the week prior to data collection. The table shows that during TAGS, proportionately more unemployed

drinkers consumed greater than 14 drinks during the week prior to data collection than after TAGS.

A significant change in alcohol consumption was detected among unemployed drinkers from the time when TAGS was in place to the time after TAGS was withdrawn. Because drinkers both during and after TAGS were unemployed, the detected change in alcohol consumption pattern suggests that there are other factor(s) in addition to employment status that perhaps are influencing the consumption of alcohol among this sample.

Self-perceived stressed persons. Both during and after TAGS, on average, drinkers who perceived themselves as stressed reportedly consumed alcohol within acceptable limits according to the Centre for Addiction and Mental Health (2003). During both phases, self-perceived stressed drinkers consumed alcohol a median of once or twice per month. During both phases, the reported amount of alcohol consumed during the week prior to data collection was less than five drinks. While these values represent the average alcohol consumption, it is evident that there are those self-perceived stressed drinkers who consumed alcohol at a rate higher than the mean or median. The self-perceived stressed drinkers who consumed alcohol above the average are most at risk for experiencing the negative consequences of alcohol consumption.

The fact that self-perceived stressed drinkers did not change their alcohol consumption pattern from the time when TAGS was in place to the time after TAGS was withdrawn while the sample of drinkers did decrease their drinking suggests that self-perceived stress may be a risk factor for alcohol consumption. This finding is in

accordance with other researchers (Abbey et al., 1993; Carney et al., 2000; Dee, 2001; Suter et al., 1997).

The purpose of the study was not to determine cause and effect relationships, but rather to determine whether or not alcohol consumption had changed over time among drinkers of the study population. The methodology and data analysis of the study do not allow the identification of cause and effect relationships between alcohol consumption and factors known to influence alcohol consumption. Further research is needed to determine the influence of self-perceived stress on the consumption of alcohol.

Summary

Despite the fact that random sampling techniques were used to recruit participants during both phases of the study, the sample in each phase of the study is demographically different. Out migration, the collapse of the cod fishery, the diversification of the current fishery and the resiliency of the study communities are some suggestions as to why the samples differ demographically.

Overall, alcohol consumption in the study area has decreased from the time when TAGS was in place to the time after TAGS was withdrawn. Contrary to what was originally thought, incomes are higher and stress levels are lower in the post-TAGS time period than they were during TAGS. This may be the result of out migration, the diversification of industry in the study area and/or the adaptation of the community to the collapse of the northern cod fishery. It may be that higher incomes translate into decreased alcohol consumption. It may also be that lower stress translates into lower

alcohol consumption. It may also be that the population in general now has better health habits due to population health promotion interventions. Based on the findings of the present study alone, none of these statements can be said with certainty.

In addition to finding a decrease in alcohol consumption overall in the study area, the study found that some sub-groups of high risk drinkers decreased their alcohol consumption pattern over time. The fact that drinkers of low-income households, male drinkers and unemployed drinkers all were drinking significantly less during the post-TAGS period suggests that other factor(s) besides income, gender and employment status may influence individual drinking.

While alcohol consumption did decrease among some high-risk groups, the study found that alcohol consumption did not change for other high-risk groups. Namely, low-income drinkers, drinkers who were single or non-partnered and drinkers who perceived themselves as stressed did not change their alcohol consumption quantity or frequency from the time when TAGS was in place to after TAGS was withdrawn. While the findings of the present study offer no direct evidence in support or against this claim, the fact that these groups did not change their alcohol consumption when the general population of drinkers did decrease their alcohol consumption demonstrates that these characteristics may be risk factors for alcohol consumption. Further research is required to determine whether this is in fact so.

Chapter 6

Strengths, Limitations and Implications

The final chapter first highlights the strengths and limitations of the research study. The chapter next explains how the findings of this study may be used to improve nursing practice, education and research.

Study Strengths

This study used random sampling to recruit participants for each phase of data collection. Because each resident of the Bonavista Headland had an equal opportunity to participate in the study, the study's findings are generalizable to the Bonavista Headland area. The study used a large sample comprising greater than 10% of the target population, increasing the reliability of the study's findings and the generalizability of the findings to the target area.

The study used frequency and quantity measures of alcohol consumption to quantify alcohol consumption patterns. Measuring alcohol consumption in this manner helps to elicit a more accurate representation of alcohol consumption patterns in the study area.

The study consists of a comparison of two cross-sectional studies conducted in the same geographic area, using the same data collection tool in both original studies. The design of the study, while retrospective, allows direct comparisons of data collected

during the original studies and aids in the elicitation of a clearer representation of alcohol consumption changes in the study area.

Study Limitations

As explained, this study did not follow the same participants from the original study to re-interview during the post-TAGS phase of data collection. Out-migration is one factor that prevented the tracking of participants over time. The participants that were a part of the during-TAGS phase are not necessarily the same participants that were a part of the after-TAGS study. Because the study did not follow the same participants through time, it was not possible to determine an individual's change in alcohol consumption from the time when TAGS was in place to after TAGS was withdrawn. Instead, overall changes in alcohol consumption in the Bonavista Headland area were determined. The present study is longitudinal only at a community level.

The findings of the study are not generalizable beyond the Bonavista Headland area. The experience of other communities and geographic areas of Newfoundland and Labrador that were affected by the cod moratorium of the 1990s in terms of alcohol consumption patterns during and after TAGS are not necessarily similar to the findings detected in this study.

The study uses self-report as a data collection method. This method of data collection relies on memory and honesty. For these reasons, the data collected may not be accurate. Whenever individual memory is relied on for data collection, there is room for inaccuracy due to memory lapse. Given that the study was seeking answers to

socially stigmatizing questions such as alcohol consumption, it may be that study participants provided answers that were more reflective of a socially desired response than accurate responses. Using community-based interviewers to collect data may have contributed to participants providing socially desirable answers because it is likely that the data collectors knew the study participants in the community.

Study participants in both phases of the study were not asked whether the reported consumption of alcohol during the week prior to data collection was typical of their alcohol consumption quantity. Participants may have reported more or less alcohol than they would normally drink at other times of the year. It was not possible to determine if the quantity of alcohol reportedly consumed by participants was typical of their consumption of alcohol. Study participants also were not asked direct questions about their frequency of binge drinking.

The study's findings relating to a change in alcohol consumption among low-income earners should be interpreted with caution because the study measured individual income in increments rather than using ratio level data. Also, questions relating to the income of participants had a lower response rate than other questions in the survey. The low response rate of income-related questions is limiting to the interpretation of the study's findings because the income changes detected in the data analysis may not accurately reflect income changes within the entire sample.

Perhaps the most significant limitation of the present study is that while the samples during both time periods were randomly selected, there are several significant demographic differences between the samples at both time periods. This makes

interpretation of the data analysis difficult because of the influence that demographic differences may have had on the observed findings.

Implications

Nursing practice. The findings of the study are useful to practicing nurses because the findings increase nurses' understanding of how the consumption of alcohol in the study area has changed since the withdrawal of TAGS support. Because of the potential health risks associated with high levels of alcohol consumption, it is important that nurses be knowledgeable of the alcohol consumption rates of their communities so that health education and programming can be specifically targeted. Appropriate resource allocation possibly will improve the quality of care that is delivered to individuals, families and the community at large. The findings of the present study offer new, community-specific information that can be used to develop more effective and appropriate care in the study area.

The study's findings may be used at primary and secondary levels of illness prevention. Evidence-based programs that are based on the identified needs of the community may be developed and implemented in the study area for the purpose of preventing premature death and illness related to the consumption of alcohol. Primary prevention relating to the misuse of alcohol is relatively main-stream in current society. Perhaps the primary prevention interventions already in place have contributed to the decreased alcohol consumption observed in the present study. The findings of the present study indicate that primary prevention of harmful alcohol consumption may be most

important during the initial phase of economic/social change, when alcohol consumption is higher due to higher levels of self-perceived stress and/or increased boredom. In both scenarios, alcohol may be consumed as a method of coping. This is important for health care providers who are in a position to intervene early whenever an economic and/or social crisis such as that experienced during the cod moratorium of the 1990s occurs.

Results potentially are useful in secondary prevention in the early identification of individuals who are believed to be at risk for experiencing the negative consequences of alcohol consumption. While it is acknowledged that further research is necessary to determine which factors influence the consumption of alcohol, findings from the present study show that unemployed drinkers, male drinkers and drinkers of low income households are groups of drinkers who may be at risk of engaging in harmful patterns of alcohol consumption during economic/social change. It could be that these groups of drinkers should be especially targeted with secondary prevention measures during these times.

That being said, this study also found that low-income drinkers, single drinkers and drinkers who perceive themselves as stressed may potentially be of particular concern for health care providers even as the TAGS program was discontinued. While the sample of drinkers in the target area decreased their consumption of alcohol from the time when TAGS was in place to after TAGS was withdrawn, these groups of drinkers did not change their alcohol consumption. It is possible that these groups of drinkers require particular attention in terms of secondary prevention. Further research is required to determine whether or not this is the case.

While it seems that there are some subgroups of drinkers that continue to be high-risk for alcohol consumption, the findings of the study are somewhat encouraging to practicing health care practitioners because the findings indicate that the population, as well as drinkers, are reportedly experiencing less stress and are drinking less alcohol during the post-TAGS period than during TAGS.

This finding may be used in the education of residents of the study area in encouraging them that the health of the community in terms of alcohol consumption has improved since the initial years of the collapse of the cod fishery. Community residents can also be educated regarding those groups of drinkers that have not changed their alcohol consumption pattern since the early years of the moratorium in the hopes that community members themselves will be able to use that knowledge to identify family, friends and community members who may be at risk for engaging in harmful alcohol consumption.

It is evident that during the initial years after the cod moratorium was announced, drinkers in general were more likely to consume more alcohol during the week prior to data collection and to drink alcohol more often than they were during the after-TAGS data collection period. While the influence of demographic changes and/or a general decline in alcohol consumption as part of healthier living in Canada can not be excluded as a possible reason for the observed change in alcohol consumption, drinkers during the time period when TAGS was in place may have been using alcohol to cope with the stressors of loss of employment, income and way of life and/or as a means to deal with boredom. While the findings of the present study do not prove or disprove this, further

research is necessary to determine the link, if any, between stress and alcohol consumption.

Nurse clinicians who are aware of the alcohol consumption pattern experienced during the initial years of the cod moratorium will be better equipped to deal with community members should a community suffer a large economic/social change such as that experienced during the cod moratorium of the 1990s. If stress is indeed positively linked with the consumption of alcohol, perhaps during times of change, nurses and other health care practitioners need to focus on promoting healthy coping strategies among community residents in order to decrease the potential for the harmful consumption of alcohol.

Nursing education. Nursing students and practicing nurses should be knowledgeable of the change in alcohol consumption that has occurred in communities affected by the cod moratorium since the withdrawal of TAGS. Nursing students, as beginning practitioners, will be expected to provide evidence-based care to individuals, families and to the larger community. The findings of this study provide evidence-based support for nursing interventions aimed at individuals, families and communities that have been affected by the cod moratorium. Although the findings of the study are not generalizable beyond the study area, the findings offer a practical indication of what may be occurring in other rural Newfoundland and Labrador communities that have been affected by the cod moratorium.

On a larger scale, this study provides evidence that can be added to research concerning how alcohol consumption may change during times of economic/social

change. Seemingly, drinkers who are experiencing large-scale change could be at higher risk of engaging in harmful alcohol consumption patterns during the initial phases of the change. This may be a means of coping with the stress and/or boredom associated with change. While the findings of the present study neither prove nor disprove whether this is so, further research regarding the relationship between stress and the consumption of alcohol during times of large-scale social change is necessary in supporting this claim.

Perhaps now more than ever, baccalaureate programs in nursing should provide current information regarding predictors of alcohol consumption and alcohol consumption theory, either as part of the mental health curriculum and/or medical nursing. Rehm et al. (2006) reported that the increase in alcohol-attributed death and illness observed between 1992 and 2002 in Canada may be linked to an increased prevalence of risky alcohol consumption practices among Canadians, such as binge drinking. Particularly relevant to nursing education in Newfoundland and Labrador in terms of alcohol consumption is that in 2003-2004 Newfoundland and Labrador had the highest provincial rate of binge drinking, with 30% of drinking Newfoundlanders and Labradoreans reporting this harmful alcohol consumption pattern (Adlaf et al., 2005). Given that the prevalence of binge drinking seems to be increasing in Canada and that there are increasingly more deaths and illness related to this pattern of alcohol consumption, future nurses should be educated about who is most at risk for engaging in this alcohol consumption pattern as well as other harmful alcohol consumption patterns, and about various theories that can help predict alcohol consumption changes. The health

of Newfoundlanders and Labradoreans is dependant on nurses being well educated on this issue.

While it was not the purpose of this study to determine the relationship between income, stress and alcohol consumption, the findings of the present study suggest that psychosocial theory for alcohol consumption has potential use in describing alcohol consumption in relation to the economic/social change brought forth by the cod moratorium of the 1990s. Alcohol consumption among drinkers was higher during the initial years of the cod moratorium, when drinkers and study participants reportedly were experiencing higher levels of stress. The findings of the present study may offer some support to this theory which suggests that people who use alcohol are likely to increase their alcohol consumption during times of stress. Further research is needed to determine whether or not this is so.

Nurse educators must be able to provide future nurses of rural Newfoundland and Labrador with current knowledge and skills that will prepare them to deliver high quality care. Nurse educators can use the study's findings to teach their students about what has been happening in rural Newfoundland and Labrador in terms of alcohol consumption since the collapse of the cod fishery and the withdrawal of TAGS support.

Nursing research. In the future, prospective longitudinal studies that allow the tracking of participants over time will add to research concerning changes in alcohol consumption patterns in the face of economic/social change by prospectively controlling for some of the change in demographics observed in this study.

Further research that seeks to determine whether alcohol consumption changes among non-drinkers during times of economic and/or social crisis would be beneficial in adding further clarification to theoretical knowledge regarding alcohol consumption. Such a study would provide the community with necessary insight into the predictors of alcohol consumption among non-drinking adults. Specifically, one research question may be, "Does economic and/or social change predict alcohol consumption among non-drinkers?" Ideally, the study would be longitudinal and follow participants over time. This would greatly allow control of demographic variables known to influence alcohol consumption.

Additionally, further research that analyzes individuals' coping style in times of economic and/or social change would be beneficial in providing clinically useful information for health care practitioners. If health care practitioners knew what coping styles were most common among individuals who were experiencing large-scale social and/or economic change, the focus of health services and health care delivery could be targeted accordingly to assist individuals to use healthier coping strategies.

As described, there are many economic and social factors known to influence the consumption of alcohol. While it was not the purpose of this study to determine which factors most influence the consumption of alcohol during times of economic/social change, it is recommended that future studies aim to discover this type of information. This can be achieved by using multivariate analysis techniques, such as structural equation modeling. This type of research would be of particular clinical benefit by

determining risk factors for harmful alcohol consumption. Health clinicians can use this information in developing disease prevention/health promotion strategies.

Future studies regarding alcohol consumption should include questions regarding typical alcohol consumption in the data collection tool. While questions regarding frequency and quantity of alcohol consumption for the past week are useful, these questions do not necessarily gauge whether the given frequency/quantity is typical of an individual's alcohol consumption pattern. Assessing the typical alcohol consumption pattern of participants would be useful in determining clinical implications of individual's drinking.

Future research assessing the relationship between income and alcohol consumption should use data collection techniques that capture participant income on a ratio scale of measurement. This would allow the researcher to more accurately analyze the relationship between income and alcohol consumption. The present study detected a significant decrease in the frequency and quantity of alcohol consumed among drinkers of low-income households but detected no change among low-income drinkers themselves. This may be because of the measurement scale of the income variable and/or the low response rate of income related questions. However, whether there is any difference between the effects that receiving a low income or being a member of a low-income household has on alcohol consumption is an area that requires further investigation.

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Appendix A

Relevant Portions of Data Collection Tool

2. Starting with yourself, I would like to list the members of your household, their relationship to you, their age, sex and their usual occupation, i.e., what they usually do (**Names are not necessary**):

RELATIONSHIP	AGE	SEX	USUAL OCCUPATION
#1. Respondent			
#2.			
#3.			
#4.			
#5.			
#6.			
#7.			
#8.			

(If more than eight members list on reverse side)

3. What is your current marital status? **(READ)**

now married and living with spouse 1
common-law relationship/live-in partner 2
divorced 3
separated 4
widowed 5
never married (single) 6

4. a. At the present time, are you mainly: **(READ)**

employed full-time, i.e., work 30 hours or more a week? ..... 1 **(GO TO b)**
employed part-time? ..... 2 **(GO TO b)**
unemployed? (looking for a job) ..... 3 **(GO TO 5)**
retired? ..... 4 **(GO TO 5)**
keeping house ..... 5 **(GO TO 5)**
a student ..... 6 **(GO TO 5)**
retraining ..... 7 **(GO TO 5)**
on disability 8
none of the above (specify) 9

13. a. Would you describe your life as presently **(READ)**

very stressful ..... 1 **(GO TO b)**
somewhat stressful ..... 2 **(GO TO b)**
not very stressful ..... 3 **(GO TO 14)**
not at all stressful ..... 4 **(GO TO 14)**

NOW I WOULD LIKE TO ASK SOME QUESTIONS ABOUT ALCOHOL CONSUMPTION.

When we use the word drink it means:

One bottle of beer or glass of draft beer
One glass of wine or sherry
One shot or mixed drink with hard liquor

18. a. In the past 12 months, have you taken a drink of beer, wine, liquor or other alcoholic beverage:

yes ..... 1 **(Ask b)**
no ..... 2 **(Go to 19)**

b. In the past 12 months, how often on average did you drink alcohol? Was it .... **(READ)**

every day? 1
4-6 times a week? 2
2-3 times a week? 3
once a week? 4
once or twice a month? 5
less often than once a month? 6

c. In the past 7 days, starting with yesterday, how many drinks did you have each day? **(Start with whatever day yesterday was)**:

Sunday? _____ Monday? _____
Tuesday? _____ Wednesday? _____
Thursday? _____ Friday? _____
Saturday? _____

THE NEXT QUESTIONS ARE FOR THOSE WHO ARE CURRENTLY UNEMPLOYED

45. How long have you been without a job and looking for one? _____ weeks

THESE NEXT FEW QUESTIONS WILL GIVE US A BETTER PICTURE OF THE PEOPLE WHO TOOK PART IN THE STUDY.

50. What is your highest level of education? (excluding courses of less than one year)

NO SCHOOLING	01
ELEMENTARY	
incomplete	02
complete	03
JUNIOR HIGH	
incomplete	04
complete	05
HIGH SCHOOL	
incomplete	06
complete	07
NON-UNIVERSITY(*voc/tech, hospital nursing schools*)	
incomplete	08
complete	09
UNIVERSITY	
incomplete	10
diploma/certificate (hygienists)	11
bachelor's degree	12
professional degree (vets, drs, dentists, lawyers)	13
master's degree	14
doctorate	15

55. a. What is range of the total income of all the members of your household for this past year before taxes and deductions?

Less than 10,000 1

10,001 - 20,000 2

20,001 - 30,000 3

30,001 - 40,000 4

40,001 - 50,000 5

50,001 - 60,000 6

60,001 - 80,000 7

80,001 - 100,000 8

Above 100,000 9

b. What is your own total individual income for this past year before taxes and deductions?

Less than 10,000 1

10,001 - 20,000 2

20,001 - 30,000 3

30,001 - 40,000 4

40,001 - 50,000 5

50,001 - 60,000 6

60,001 - 80,000 7

80,001 - 100,000 8

Above 100,000 9

57. What, if any, is your religion?

no religion 1

Roman Catholic 2

United Church 3

Anglican 4

Salvation Army 5

Pentecostal 6

Other 7

Appendix B

Ethical Approval: Human Investigation Committee of Memorial University of Newfoundland

Memorial
University of Newfoundland

Human Investigation Committee
Research and Graduate Studies
Faculty of Medicine
The Health Sciences Centre

March 13, 2006

Reference #04.57

Ms. K. Hemeon
Student
School of Nursing
Health Sciences Centre

Dear Ms. Hemeon:

Thank you for taking the time to complete the annual update form for the research study entitled **"Alcohol consumption during and after the Atlantic ground fish strategy in a select Newfoundland community affected by the cod moratorium"**

The Chairs of the Human Investigation Committee have reviewed your annual update form and have granted approval of this study until **March 2007,** at which time you will be contacted for another update. This decision will be reported to the full Human Investigation Committee at the meeting scheduled for **March 16, 2006**.

Sincerely,

Richard Neuman, PhD
Co-Chair
Human Investigation Committee

John Harnett, MD, FRCPC
Co-Chair
Human Investigation Committee

RN;JH\jd

C Dr. C. Loomis, Vice-President (Research), MUN

Appendix C

Consent Form – *Eco Research – Health Survey*

THE HEALTH SURVEY: RESPONDENT RELEASE FORM

Please read the following carefully before deciding whether or not to proceed. This survey is part of a research program at Memorial University and is funded by Canada's three academic research councils. We are doing this survey to find out how people have been coping with the recent economic changes in the region, whether they have any effect on your health and your community. We would like to ask you some questions on these topics, which should take about one hour.

Everyone knows that many studies have been done, but we think this one is different and necessary. For the first time, we are bringing together people who study many different aspects of social life and the physical environment to get a full picture of the situation. And we are concerned with what local people think about the issues we study. So this survey is in fact part of a much larger project that aims to improve general knowledge of places such as this and to identify those areas where change would be consistent with the interests of local people. Results of the survey will be made available to the public of the area. There are no direct benefits, however, beyond the $10 which we offer in recognition of the time you are taking to help us.

Your participation is voluntary and you may end the interview at any time. Moreover, you may refuse to answer any particular question if you please. All information you provide will be combined with information from about 900 other people in such a way that you cannot be identified. Your name will not appear on any page of the questionnaire. After the study has been completed, the questionnaire will be destroyed. The information you provide will be stored on computer and used in academic talks and publications, but it will be impossible to identify you or any other respondent. When the project is over, the data will be placed in the archives of the Centre for Newfoundland Studies at Memorial University. It is our hope that these assurances of privacy will allow you to provide honest answers that are as complete as possible. Please feel free to ask the interviewer any questions about the provision of privacy. If you have any concerns that cannot be answered by the interviewer, you may contact Ms. Marianne Lamb, Director of the School of Nursing, Memorial University, St. John's, A1C 5S7 (tel. 737-6972).

Thank you in advance for your assistance in this project.

Sincerely,

Rosemary E. Ommer

Rosemary E. Ommer
Project Manager

Appendix D

Consent Form – *Natural Resources Depletion and Health*

CONSENT TO TAKE PART IN HEALTH RESEARCH
MEMORIAL UNIVERSITY OF NEWFOUNDLAND
SCHOOL OF NURSING

TITLE: Natural Resource Depletion and Health

INVESTIGATORS: Dr. L. Gien, Principal Investigator, Dr. M. Laryea, Co-Principal Investigator Dr. C. Orchard, Dr. A. Kozma, Dr. M. Murray, Ms. S. Lewis, Dr. W.Kennedy, Dr. D. MacDonald, Mr. N. Tilley

SPONSOR: Social Science and Humanities Research Council of Canada

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You have been asked to take part in a research study. It is up to you to decide whether to be in the study or not. Before you decide, you need to understand what the study is for, what risks you might take and what benefits you might receive. This consent form explains the study.

The researchers will:

- Discuss the study with you
- Answer your questions
- Keep confidential any information which could identify you personally
- Be available during the study to deal with problems and answer questions.

If you decide not to take part or leave the study, this will not affect your health care/normal treatment.

1. **Introduction:**
   When the ground fishery closed in 1992, the lives of many people living in coastal communities were affected. The Government TAGS program was a means of some financial support to families in these communities. Three years have now passed since the TAGS program finished and there is little information about how people in these communities are coping with their lives.
2. **Purpose of Study is to find out:**
   a. How people in these coastal communities are coping with their lives and social life in general, in their communities, since the withdrawal of TAGS.
   b. Identify how communities have bounced back despite the stresses caused by the closure of the ground fishery and the withdrawal of TAGS.
3. **Description of the Study procedures:**
   If you agree to take part in this study, you will be interviewed face-to-face by the interviewer. If you are a community leader, you will be interviewed by phone.
4. **Length of time:** All interviews will be between 1 – 1½ hours long.
5. **Possible risks and discomforts:** There will be no risks and discomforts. The investigators realize that the participants may find the interviews long and tiring for them.
6. **Benefits: We cannot guarantee that you will benefit from taking part in this study.**
   There are no immediate benefits except it provides you an opportunity to express your ideas and feelings. Participants will receive a copy of the summary of the results, if requested.
7. **Liability Statement:**
   Signing this form give us your consent to be in this study. It tells us that you understand the information about the research study. When you sign this form, you do not give up your legal rights. Researchers and agencies involved in this research study will have their legal and professional responsibilities.
   You will be provided a copy of the signed consent form.
8. **Contacts:**
   a. If problems come up during the study, please contact **Dr. Lan Gien (709-777-6276) or Dr. Maureen Laryea (709-777-6869).**
   b. The investigators or one of the staff can be reached at (709) 777-7065 or 6753
   c. If you have questions about this research study or your rights in taking part in it, you may contact the Human Investigation Committee at (709) 777-6974.